Performance Impact Analysis (PIA)
GATE Testing Proposal
November 22, 2022

I. Proposed Action.

District staff have developed a proposal to utilize local norms for GATE testing and placements. The complete proposal is attached here as Exhibit A and incorporated herein by reference.

Beginning in January 2023, district staff will implement the use of local norms when offering GATE placements to students for the 2023-2024 school year. Beginning in the 2023-24 school year, district staff will transition GATE testing online.

"Beyond simply identifying a larger number of gifted students, the primary goal of this proposed change is to produce a GATE-qualifying class whose demographics more closely resemble the demographics of TUSD as a whole. Achieving this would improve equity of access to advanced learning experiences for the subgroups who are currently underrepresented among GATE qualifiers: African American, Hispanic, Native American, ExEd, ELL, and low-income students." (GATE Local Norms Proposal, page 6)

The following recommendations will impact placement statements sent out beginning in January 2023 for the 23-24SY:

> Recommendation #1: Update and more clearly formalize the District Norm process for the Tucson Unified School District GATE Program.
>
> Recommendation #2: Uniformly apply the local norming process to all Tucson Unified School District students who test for GATE Services.
>
> Recommendation #3: Revision of how students are offered placement in GATE Self-Contained Classrooms based on key factors that will ensure schools and their Self-Contained Program's student demographics reflect each other.
>
> Recommendation #4: Transition from using the National Norms only to District Norms only within the next 3-5 years while using the proposed application model to assist in the transition.
>
> (GATE Local Norms Proposal, page 2)

II. Issues.

District staff currently conduct all GATE testing using pencil and paper. This type of testing requires scanner maintenance fees, purchasing and storage of paper testing materials, tests must be scanned by hand, score processing time is significant, and is time consuming for both staff and students.

District staff currently use national norms for GATE qualification by implementing local norms on a district level. We will be able to ensure all gate qualifications more closely reflect Tucson Unified's district demographics.

The GATE Local Norms proposal will ensure students who qualify for GATE services reflect the student populations in TUSD versus the national populations.

- The demographics of national norming samples for the CogAT dramatically differ from the demographics of TUSD as well as prior year GATE testing cohorts.
- About 10% of the population is gifted but national norms do an inadequate job of identifying all these students.
- Reliance on non-representative nationally normed scores appears to be contributing to continued underrepresentation of certain groups of students among GATE qualifying cohorts.
- Prior efforts to address underrepresentation can be improved upon with revisions to methodology and application to the full cohort of GATE testers.
- This will establish a districtwide system which can be replicated by other personnel in the future.

III. Objectives.

There are four main objectives for the proposed changes:

Goal #1: Increase student GATE Program access opportunities for the 2023-2024 School Year.

Goal #2: Using sound statistical methodology, create norming tables ("local norms") for the CogAT that better represent the demographics of Tucson Unified School District (TUSD) GATE testers

Goal #3: Use local norms to assess qualifications to receive Gifted Services for all TUSD students moving forward to identify eligibility more equitably for GATE Services who would not otherwise qualify due to non-representative national norming samples.

Goal #4: Administer GATE testing online.

The rationale for this change is as follows:

- Online testing provides opportunities to support student needs more efficiently, will save staff time and allow parents to receive testing results sooner.

- The demographics of national norming samples for the CogAT dramatically differ from the demographics of TUSD as a whole as well as prior year GATE testing cohorts.

- Reliance on non-representative nationally normed scores appears to be contributing to continued underrepresentation of certain groups of students among GATE qualifying cohorts.
- Prior efforts to address underrepresentation can be improved upon with revisions to their methodology and application to the full cohort of GATE testers.

(GATE Local Norms Proposal, page 4)

IV. USP Program Background.

The GATE department has long been aware of this incongruence between the demographics of the CogAT national norming sample and the demographics of TUSD, and how it can contribute to inequities if left unaddressed. Historically, GATE staff have worked in conjunction with the Desegregation department and external consultants to implement a process designed to increase representation of underrepresented subpopulations at target sites. This is the process that has been referred to as “local norms” elsewhere in GATE program documentation.

ALE and A&E propose that this process could be further improved by creating TUSD’s own district-level norming tables from historic TUSD GATE testing data. This will enable TUSD to calculate district-normed scores for all students who test for GATE services. In other words, it will enable the district to compare all students to *their actual peers* when assessing CogAT scores for GATE service qualification. Moreover, this revision will ensure that the calculation is applied in exactly the same way regardless of a student’s GATE feeder school, making scores more easily comparable across specific sites. This will also enable A&E to maintain a record of locally normed scores and any resulting qualifications. Lastly, by removing some of the manual components of the process, we will save both time and labor.

We propose that these scores, hereafter referred to as “district scores,” then be used to assess qualification for all students tested. Our projections indicate that not only would such a change result in more equitable access to services for underrepresented subpopulations, but it would also nearly double the number of students who qualify for gifted programs identified each year.

(GATE Local Norms Proposal, pages 3-4)

V. Impact Analysis: Impact on Protected Classes (AA, LatinX, including EL students).

A. Impact on Effectiveness of USP Program or Activity

Impact on Section V – ALEs:

By increasing the participation of underserved communities, this is highly likely to increase compliance with the 15% rule.

To assess whether the introduction of district scores would improve representation of these subgroups among GATE qualifiers, we compared the demographic profile of GATE qualifying students across all five years of the norming sample. As before, qualification status was assessed using current-year criteria in order to facilitate comparison. Tables 3 and 4 below display the average percent and number of students who would have qualified for GATE services across all years of the sample group, disaggregated by demographic subgroup.

In nearly all cases, use of district scores would increase the representation of currently underrepresented subgroups in both percentage and absolute number, and among both Self-Contained and Pull-Out qualifiers. The exceptions to this are slight decreases in the percentage of ExEd and ELL Self-Contained qualifiers and African American Pull-Out qualifiers. However, all three subgroups would still increase in absolute number of gifted students identified. Indeed, qualification via district scores results in so many additional SC qualifiers on average that even the other subgroups who see a decrease in relative proportion (White, Asian American, Multiracial) still increase in number.

All years (average)	Students qualifying for SC with **national** scores*	Students qualifying for SC with **district** scores*	Difference*
N	685.8	1299	613.2
White	39.58% (271)	34.94% (454)	-4.64%
African American	3.76% (26)	4% (52)	0.24%
Hispanic	45.76% (314)	50.66% (658)	4.9%
Native American	1.48% (10)	1.96% (25)	0.48%
Asian American	3.06% (21)	2.68% (35)	-0.38%
Multiracial/Other	6.4% (44)	5.8% (75)	-0.6%
ExEd	6.08% (42)	5.94% (77)	-0.14%
ELL	4.8% (33)	3.82% (50)	-0.98%
FRL	46.06% (316)	50.66% (658)	4.6%

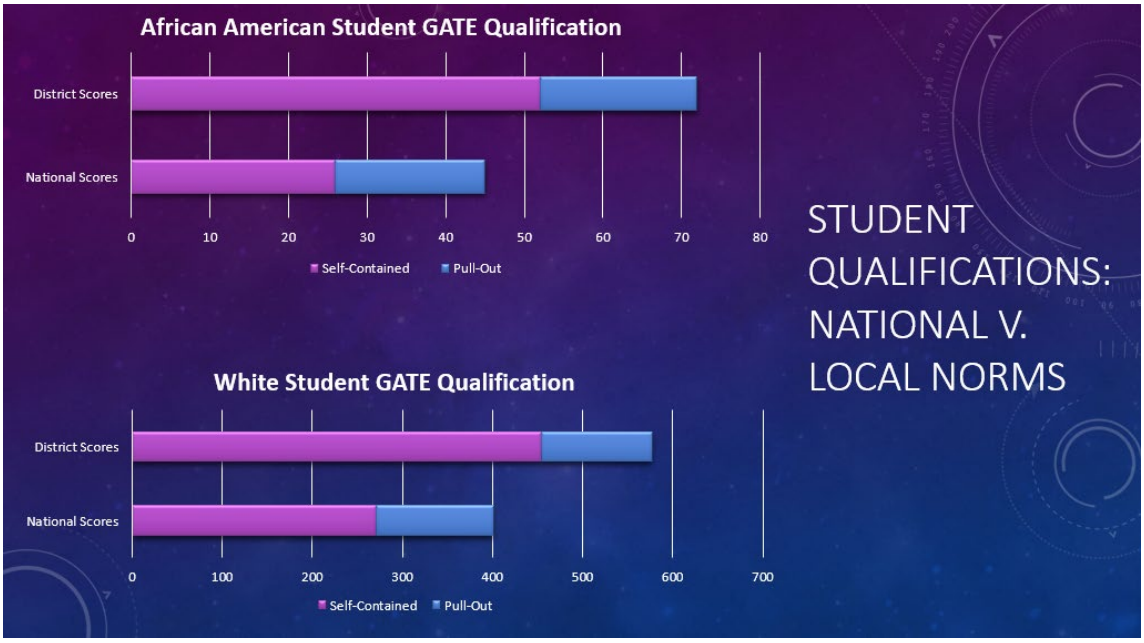
Relative proportion decreases
Relative proportion increases

Table 3: Comparison of number of Self-Contained GATE qualifiers and their demographic breakdown, depending upon score type used.
*Federal ethnicity is used in Tables 3 and 4 to facilitate comparison with Tables 1 and 2; see Appendix spreadsheet for breakdowns by USP ethnicity

All years (average)	Students qualifying for PO with **national** scores*	Students qualifying for PO with **district** scores*	Difference*
N	430.8	472.4	41.6
White	30.2% (130)	26.1% (123)	-4.1%
African American	4.36% (19)	4.26% (20)	-0.1%
Hispanic	56.72% (244)	60.48% (286)	3.76%
Native American	2.92% (13)	2.98% (14)	0.06%
Asian American	2.42% (10)	1.86% (9)	-0.56%
Multiracial/Other	5.42% (23)	4.34% (21)	-1.08%
ExEd	8.08% (35)	9.7% (46)	1.62%
ELL	5.5% (24)	7.06% (33)	1.56%
FRL	57.94% (250)	59.84% (283)	1.9%

Relative proportion decreases
Relative proportion increases

Table 4: Comparison of number of Pull-Out GATE qualifiers and their demographic breakdown, depending upon score type used.



While these prospective improvements to equity and accessibility of GATE services are certainly something to be pleased about, we must also consider the potential impacts this shift may have on service provision. As seen in Table 3, use of district scores has the potential to nearly double the number of students identified as Self-Contained qualified. While many students who are offered SC placement do not accept it, the majority of those who decline opt instead for Pull-Out services at their neighborhood school. This may or may not result in a greater number of GATE-qualified students than the district has the capacity to serve. On the one hand, GATE enrollment at most sites has historically been well below capacity, lower testing numbers will also result in lower numbers of qualifying students, and many of the "additional" qualifiers may be students who would have been

offered placement under the previous local norms process already. At the same time, as the pandemic subsides, GATE testing cohorts may once again grow in size and produce enough qualifying students to overburden existing itinerant staff and the capacity at popular SC sites like Lineweaver Elementary.

It is important to remember that, for Self-Contained GATE services, qualification alone does not necessarily result in an offer of placement, however. Placement offers are subject to feeder site capacity and will be issued in a priority order described in detail later in this proposal. Historically, there has always been more than enough capacity available to issue placement offers to all students qualifying for SC services—indeed, the need to fill additional seats was what originally led to the use of the previous local norms placement process. Initial research by ALE indicates that the increased number of qualifiers is not likely to present a major problem for service capacity for at least the next three years. We believe this will allow sufficient time to hire and train new GATE teachers as needed.

(GATE Local Norms Proposal, pages 6-8)

Currently CogAT tests must be scanned by hand which is tedious and time consuming. Beginning in 23-24SY, all CogAT testing will take place online to save staff time and ensure families receive placements and scores in a timely manner. The increased cost for this change is outlined in the table below.

Annual Cost of Online CogAT Testing			
Description	Per Unit Price	Quantity	Total
CogAT Test License (Includes online exams, and scoring).	$ 10.00	10000	$ 100,000.00
	Yearly Subtotal		$ 100,000.00
	Tax		$ 7,000.00
	Total Yearly Cost		$ 107,000.00
One-Time Set Up Costs			
Description	Per Unit Price	Quantity	Total
Staff Training Costs	$ 750.00	1	$ 750.00
20 pack of Tablets, Cases, and 3 year protection plan Ipads to be used for Testing	$ 3,779.50	21	$ 79,369.50
Charging Stations	$ 1,366.00	7	$ 9,562.00
	Subtotal		$ 89,681.50
	Tax		$ 6,277.71
	Total One-time Cost		$ 95,959.21

Benefits of online GATE Testing:

- Save staff time spent on scanning, scoring, and test administration

- Save on scanner maintenance costs
- Save on purchase of testing materials
- Ensure families receive placements and scores in a timely manner
- Improved reliability of scores
- Scores returned within 24 hours of test administration
- Repository of reports provided by testing company (Riverside) when testing online
- Increased ability to provide multiple language accommodations
- Online Exceptional Education accommodations available (font size, screen color, etc.)
- Increased ability to provide multiple language accommodations

B. Impact on Other District Programs or Obligations under the USP

1. Compliance – No impact
2. Student Assignment – Potential positive impact since more students will be enrolling in GATE Self-contained from the assigned feeder pattern areas.
3. Transportation – No impact due to incentive transportation already being available in these areas
4. Admin/Certified staff – No impact since there are already GATE training and recruitment for teachers in place and GATE Self-contained classes are not currently at capacity.
5. Quality of Education – No impact on other areas of Section V since these areas already support ALE recruitment by outreach, etc.
6. Discipline – No impact
7. Family and Community Engagement – No impact
8. Extracurricular Activities – No impact
9. Facilities and Technology – No significant impact
10. Accountability and Transparency – No impact

C. Data Sources

See APPENDIX A – GATE Local Norms Proposal pages 13-24 (Appendix B of the proposal)

D. Assumptions

To better understand how these changes will impact prospective GATE students, A&E conducted an analysis using data from the TUSD norming sample. District percentiles, stanines, and NCEs were calculated for each CogAT score in the sample using the groupings described previously in this proposal. Then, each observation was matched with the Raven score from the corresponding student and year. Finally, GATE qualification was assessed twice: once by applying the SY 21-22 criteria to each observation of national CogAT scores and once by applying the criteria to each observation of district CogAT scores. This enables us to compare the

demographic makeup of students who would have qualified with their national scores and SY 21-22 criteria during each year of the norming sample with that of students who would have qualified with their district scores and SY 21-22 criteria.

Scores were reassessed using current-year qualification criteria only so that qualifications could be compared “apples to apples” in a way that use of existing qualification date records would not have permitted. Moreover, this also enabled us to assess each set of scores present in the data, regardless of whether the student tested once or more than once in the period from 15-16 to 19-20.

This methodology does necessitate some caution around interpretation, however: First, because current-year qualification criteria were used, the historic numbers presented here and in the Appendix to this proposal do not reflect actual reported totals for those years but rather must be understood as hypothetical. Second, the reported number of students qualifying with their district scores each year is an estimate and not a perfect re-creation of an alternate reality. This is because students who qualify for Self-Contained GATE services are not retested in subsequent years. Consequently, some students in the dataset who did test multiple times over the five-year period would not have done so had their qualification been assessed via their district scores. The most likely impact of this is a slight inflation in our reported number of district score-based SC qualifications.

Beyond simply identifying a larger number of gifted students, the primary goal of this proposed change is to produce a GATE-qualifying class whose demographics more closely resemble the demographics of TUSD as a whole. Achieving this would improve equity of access to advanced learning experiences for the subgroups who are currently underrepresented among GATE qualifiers: African American, Hispanic, Native American, ExEd, ELL, and low-income students.

E. Research Based Sources

Currently and in prior years, Tucson Unified’s GATE Program has utilized the process of “Local Building Norms”. This means that students from a specific school were compared to other students within that specific school to determine if there are any additional students who could benefit from GATE services. GATE staff identified the scores for that given school which fell outside of GATE Qualification criteria but were within a given percentage of the top scoring students at that school. This process was only implemented at a small number of schools who had open seats in GATE classrooms. This method did not statistically account for a student’s background or compare students relative to our other students districtwide.

The updated process referred to as “Local District Norms” standardizes the process of identifying qualified GATE Students by comparing TUSD students to other students within the district. Instead of looking at a given percentage from a specific school, we will re-calculate standard scores for our student’s district wide to determine who qualifies based on Tucson Unified’s student population as a whole. Since this process would be applied to every student tested, it brings greater equity, uniformity, and statistical fidelity to the identification process and ensures we are serving all of our most gifted students within the district.

APPENDIX B – “Effect of Local Norms on Racial and Ethnic Representation in Gifted Education”

Major Take Aways:
- Local norms have the potential to improve African American and Latinx Representation by at least 20% (pg. 14).
- The utilization of Local Norms can be seen, “as a way to diversify gifted and talented populations. More broadly, we found that shifting identification criteria from national norms to any more proximal norming group (with the exception of state norms) appeared to lead to a meaningful increase (i.e., >20% gain) in gifted representation rates for African American and Latinx students across mathematics and reading.” (Pg. 14)
- “…to expand the number of students receiving services by using both school-based and national/state/district norms, which will not improve disproportionality as dramatically as local norms alone but should sharply increase the number of previously underserved African American and Latinx students eligible for gifted services.” Pg. 16

APPENDIX C – Presentation From Jason McIntosh: Attached Power Point
Major Points:
“A student from a low-income family that scores at the 86th percentile on the CogAT has the same intellectual ability as a student from a middle to upper income family who scores at the 97th percentile.”

“African American, Hispanic, and Native American students have traditionally been underrepresented by 40% for decades”. (Ford, 2012, p. 58)

Ford, D. Y. (2021). Multicultural gifted education. Routledge.

VI. Conclusion.

Based on the research and practical applications presented here, A&E and ALE are confident that district-wide use of local norms will improve access to GATE services for demographic groups that are currently underrepresented. Additionally, we believe that the systematic and statistically rigorous approach proposed here will:

- Eliminate opportunities for conscious or unconscious bias
- Improve the reliability of existing GATE qualification/placement methods
- Improve the accuracy with which GATE testing identifies giftedness among subpopulations
- Correct for inequities that have emerged as a result of nationally normed standard scores
- Be replicable by other personnel in the future
- Result in processes that can be transparently and clearly communicated to stakeholders
- Create opportunities for students who would not previously have had them

(GATE Local Norms Proposal page 12)

Date: November 22, 2022
Prepared by: Sky Saczko, Director of Advanced Learning Experiences
Reviewed and Approved: Dr. Gabriel Trujillo, Superintendent

SY 22/23

TUSD GIFTED AND TALENTED EDUCATION

TESTING AND PLACEMENT LOCAL NORMS PROPOSAL

BY: ALYSON ROBLES-HILL & ROBERTO CRUZE

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OVERVIEW

The Objective

- Need #1: Update alternative screening methods used to identify students who are Culturally, Linguistically, and Economically Diverse (CLED) for Gifted and Talented Education (GATE) Qualifications.
- Need #2: Standardize the utilization and application of Local Norms to all students' district wide.

The Opportunity

- Goal #1: Increase student GATE Program access opportunities for the 2023-2024 School Year.
- Goal #2: Using sound statistical methodology, create norming tables (“local norms”) for the CogAT that better represent the demographics of Tucson Unified School District (TUSD) GATE testers
- Goal #3: Use local norms to assess qualifications to receive Gifted Services for all TUSD students moving forward to identify eligibility more equitably for GATE Services who would not otherwise not qualify due to non-representative national norming samples.

The Solution

- Recommendation #1: Update and more clearly formalize the District Norm process for the Tucson Unified School District GATE Program.
- Recommendation #2: Uniformly apply the local norming process to all Tucson Unified School District students who test for GATE Services.
- Recommendation #3: Revision of how students are offered placement in GATE Self-Contained Classrooms based on key factors that will ensure schools and their Self-Contained Program’s student demographics reflect each other.
- Recommendation #4: Transition from using the National Norms only to District Norms only within the next 3-5 years while using the proposed application model to assist in the transition.

OUR PROPOSAL

Normalized scores, such as percentile ranks, stanines, and Normal Curve Estimates (NCEs) are a description of where a particular test-taker’s score falls with respect to some larger reference group presumed to be similar to the population from which that test-taker comes. When a new assessment is created, its designers must identify the reference group to be used when converting raw point values to standard scores. This reference group is known as the “norming sample,” and the tables used to map a raw score to its corresponding normalized score are known as “norming tables.”

A problem arises, however, when the test-taker comes from a population that is unlike the norming sample. The test-taker may experience a different context or have different characteristics that render their performance incomparable to the performance of test-takers in the norming sample. This can result in test-takers being systematically disadvantaged or advantaged, depending upon how similar the population they come from is to the norming sample.

Because the CogAT assessment is used nationwide, its designers used a norming sample designed to mirror the demographics of American K-12 students. For school districts whose demographics are similar to those of the nation as a whole, these national norms will result in normalized scores that provide a highly accurate description of student performance relative to peers. However, the demographics of students who test for GATE services in TUSD differ in substantial and, we believe, significant ways from the demographics of American schoolchildren in general (Table 1).

	CogAT	TUSD GATE Testers
Source	**2010 Standardization Sample (Weighted)**	**A&E GATE testing and student demographic records, 2015-16 to 2019-20***
N	52,237 (K-8)	38,011**
White	57.6%	20.6%
African American	12.4%	5.7%
Hispanic	20.1%	63.8%
Native American	1.4%	3.7%
Asian American	3.7%	1.8%
Multiracial/Other	4.8%	4.4%
ExEd	6.6%	11.2%
ELL	2.8%	10.9%
FRL	19%	67.9%

Lower than national norming sample

Higher than national norming sample

Table 1: Comparison of demographic makeup of CogAT norming sample and historic TUSD GATE testers
** Federal ethnicity is used for comparison purposes.*
*** Includes only students who completed CogAT testing.*

This difference in demographic composition has adversely impacted access to GATE services for some subpopulations within TUSD. When students at TUSD test for GATE services with the CogAT, the percentile rankings, stanines, and NCE scores they receive have been normalized with respect to the CogAT national norms. These national norms anticipate that CogAT performance in TUSD will follow the same distribution as CogAT performance nationwide—but the demographics of TUSD are so different from those of the norming sample that such an assumption cannot be made.

When normalized scores are calculated on the basis of this assumption, the result is that for all student groups except African-Americans, the percentage of TUSD GATE qualifiers in each subpopulation is biased in the direction of the national norms (Table 2). For White, Asian-American, and Multiracial students, this means an overrepresentation emerges, because the national norming sample contains a larger percentage of these students than is historically represented among TUSD GATE testers. For Hispanic, Native American, Exceptional Education, English Language Learners, and low-income students, an underrepresentation emerges, because these groups comprise a larger percentage among TUSD GATE testers than they do in the CogAT norming sample. African-American students are an exception, in that they remain underrepresented among TUSD GATE qualifiers despite being represented at a higher rate in national norming samples. While these disparities may not be due *solely* to the influence of the non-representative CogAT norming sample, the Advanced Learning Experiences Department (ALE) and the Assessment and Evaluation Department (A&E) propose that equity of access to advanced learning experiences could be substantially improved with a revision of the local norming process currently used in TUSD.

The GATE department has long been aware of this incongruence between the demographics of the CogAT national norming sample and the demographics of TUSD, and how it can contribute to inequities if left unaddressed. Historically, GATE staff have worked in conjunction with the Desegregation department and external consultants to implement a process designed to increase representation of underrepresented subpopulations at target sites. This is the process that has been referred to as “local norms” elsewhere in GATE program documentation.

	TUSD GATE Testers	TUSD GATE Qualifiers
Source	**A&E GATE testing and student demographic records, 2015-16 to 2019-20**	**A&E GATE qualification records, 2015-16 to 2019-20**
N	38,011	4,473
White	20.6	36.2
African American	5.7	3.8
Hispanic	63.8	49.2
Native American	3.7	2.1
Asian American	1.8	2.7
Multiracial/Other	4.4	6
ExEd	11.2	7.1
ELL	10.9	5.2
FRL	67.9	50.2

Underrepresented
Overrepresented

Table 2: Comparison of demographic makeup of 5-year TUSD GATE Testing cohort and 5-year TUSD GATE Qualifying cohort

ALE and A&E propose that this process could be further improved by creating TUSD's own district-level norming tables from historic TUSD GATE testing data. This will enable TUSD to calculate district-normed scores for all students who test for GATE services. In other words, it will enable the district to compare all students to *their actual peers* when assessing CogAT scores for GATE service qualification. Moreover, this revision will ensure that the calculation is applied in exactly the same way regardless of a student's GATE feeder school, making scores more easily comparable across specific sites. This will also enable A&E to maintain a record of locally normed scores and any resulting qualifications. Lastly, by removing some of the manual components of the process, we will save both time and labor.

We propose that these scores, hereafter referred to as "district scores," then be used to assess qualification for all students tested. Our projections indicate that not only would such a change result in more equitable access to services for underrepresented subpopulations, but it would also nearly double the number of students who qualify for gifted programs identified each year.

Rationale

- The demographics of national norming samples for the CogAT dramatically differ from the demographics of TUSD as a whole as well as prior year GATE testing cohorts.
- Reliance on non-representative nationally normed scores appears to be contributing to continued underrepresentation of certain groups of students among GATE qualifying cohorts.
- Prior efforts to address underrepresentation can be improved upon with revisions to their methodology and application to the full cohort of GATE testers.

Norming Process Execution Strategy

Norming Sample

The norming sample consists of all in-district CogAT testing records from 2015-16 (the year in which the district implemented universal testing for grades 1 and 5 to 2019-20 (the most recent pre-pandemic data). (N=38,011)

At the present time, ALE and A&E have opted not to create norming tables for the NNAT3 or the Raven. The NNAT3 has been in use in TUSD only since 2019-20, and the comparative lack of observations would necessitate

comparisons between students with widely varying ages. Calculating local percentiles using such large age groups results in rankings that are systematically biased against younger students. Moreover, this effect is particularly pronounced among our NNAT3 testers, since that assessment is used only with the youngest students who test. The demographics of the NNAT3 national norming sample present the same problems as those posed by the CogAT, however, and we recommend development of district norming tables for the NNAT3 if it continues to be used and when sufficient data is available to compare students only to others the same age.

Norming tables are not being recommended for the Raven at this time due to the fact that this assessment is being phased out in favor of the Raven 2.

Creation of Norming Tables

Students were divided into groups by CogAT test form (which also corresponds with grade level) and age in months. The number of different age groups within each grade level varies depending upon number and distribution of observations. In general, age groups are defined so as to be as narrow as possible without sacrificing statistical validity. This will ensure that students are compared to others who are as close to them in age as possible.

Percentile rankings were then calculated for the distribution of raw scores within each test form-subtest-age group combination, and the percentile rank corresponding to each test form-subtest-age group-raw score combination was recorded in lookup tables in A&E's SQL server.

Calculation of Local Standard Scores

Going forward, local CogAT percentile rankings will be calculated for all students tested by matching the students' test form, subtest, age group, and raw score to the corresponding locally normed percentile rank. Once the local percentile rank has been obtained, mathematical formulas can be used to convert this value into other commonly used scores such as stanine and NCE. The local percentile rank, as well as any scores calculated from it, will describe that student's performance relative to other TUSD students of similar age who tested under similar conditions.

Assessing Gifted Services Qualification Using Local Standard Scores

At present, qualification for GATE services is assessed using the following criteria:

Self-Contained
Stanine of 9 on any CogAT subtest, **OR**
Stanine of 8 on any CogAT subtest with a combined CogAT and Raven NCE ≥ 258, **OR**
Stanine of 9 on the Raven and a combined CogAT and Raven NCE ≥ 258
Pull-Out
Stanine of 8 on any CogAT subtest with a combined CogAT and Raven NCE < 258, **OR**
Stanine of 9 on the Raven with a combined CogAT and Raven NCE < 258, **OR**
Stanine of 8 on the Raven, stanines < 8 on all CogAT subtests, and combined CogAT and Raven NCE ≥ 258

Note: The NCE cut score was lowered from 268 to 258 beginning in the 2018-19 school year.

We propose that qualification criteria remain the same but be applied to district-normed stanine and NCE values rather than the nationally normed scores. Nationally normed scores will be kept on file for reference but will not serve as the basis for qualification.

Updating Local Norms

In the future, it may be necessary to revise the local norming tables if changes are made to the testing process that significantly alter the way in which students are selected to test, the conditions under which they test, or the demographic makeup of who is tested. "Outdated" local norms could still be used and would likely still result in greater accuracy than national norms; however, this accuracy would be diminished by an amount that is difficult if not impossible to measure. Review and, if necessary, revision of these local norms should occur whenever TUSD

demographics and/or circumstances are believed to have changed enough to warrant it, or whenever a major change is made to testing implementation.

EXPECTED RESULTS

To better understand how these changes will impact prospective GATE students, A&E conducted an analysis using data from the TUSD norming sample. District percentiles, stanines, and NCEs were calculated for each CogAT score in the sample using the groupings described previously in this proposal. Then, each observation was matched with the Raven score from the corresponding student and year. Finally, GATE qualification was assessed twice: once by applying the SY 21-22 criteria to each observation of national CogAT scores and once by applying the criteria to each observation of district CogAT scores. This enables us to compare the demographic makeup of students who would have qualified with their national scores and SY 21-22 criteria during each year of the norming sample with that of students who would have qualified with their district scores and SY 21-22 criteria.

Scores were reassessed using current-year qualification criteria only so that qualifications could be compared “apples to apples” in a way that use of existing qualification date records would not have permitted. Moreover, this also enabled us to assess each set of scores present in the data, regardless of whether the student tested once or more than once in the period from 15-16 to 19-20.

This methodology does necessitate some caution around interpretation, however: First, because current-year qualification criteria were used, the historic numbers presented here and in the Appendix to this proposal do not reflect actual reported totals for those years but rather must be understood as hypothetical. Second, the reported number of students qualifying with their district scores each year is an estimate and not a perfect re-creation of an alternate reality. This is because students who qualify for Self-Contained GATE services are not retested in subsequent years. Consequently, some students in the dataset who did test multiple times over the five-year period would not have done so had their qualification been assessed via their district scores. The most likely impact of this is a slight inflation in our reported number of district score-based SC qualifications.

Beyond simply identifying a larger number of gifted students, the primary goal of this proposed change is to produce a GATE-qualifying class whose demographics more closely resemble the demographics of TUSD as a whole. Achieving this would improve equity of access to advanced learning experiences for the subgroups who are currently underrepresented among GATE qualifiers: African American, Hispanic, Native American, ExEd, ELL, and low-income students.

To assess whether the introduction of district scores would improve representation of these subgroups among GATE qualifiers, we compared the demographic profile of GATE qualifying students across all five years of the norming sample. As before, qualification status was assessed using current-year criteria in order to facilitate comparison. Tables 3 and 4 below display the average percent and number of students who would have qualified for GATE services across all years of the sample group, disaggregated by demographic subgroup.

In nearly all cases, use of district scores would increase the representation of currently underrepresented subgroups in both percentage and absolute number, and among both Self-Contained and Pull-Out qualifiers. The exceptions to this are slight decreases in the percentage of ExEd and ELL Self-Contained qualifiers and African American Pull-Out qualifiers. However, all three subgroups would still increase in absolute number of gifted students identified. Indeed, qualification via district scores results in so many additional SC qualifiers on average that even the other subgroups who see a decrease in relative proportion (White, Asian American, Multiracial) still increase in number.

All years (average)	Students qualifying for SC with **national** scores*	Students qualifying for SC with **district** scores*	Difference*
N	685.8	1299	613.2
White	39.58% (271)	34.94% (454)	-4.64%
African American	3.76% (26)	4% (52)	0.24%
Hispanic	45.76% (314)	50.66% (658)	4.9%
Native American	1.48% (10)	1.96% (25)	0.48%
Asian American	3.06% (21)	2.68% (35)	-0.38%
Multiracial/Other	6.4% (44)	5.8% (75)	-0.6%
ExEd	6.08% (42)	5.94% (77)	-0.14%
ELL	4.8% (33)	3.82% (50)	-0.98%
FRL	46.06% (316)	50.66% (658)	4.6%

Relative proportion decreases
Relative proportion increases

Table 3: Comparison of number of Self-Contained GATE qualifiers and their demographic breakdown, depending upon score type used.
*Federal ethnicity is used in Tables 3 and 4 to facilitate comparison with Tables 1 and 2; see Appendix spreadsheet for breakdowns by USP ethnicity

All years (average)	Students qualifying for PO with **national** scores*	Students qualifying for PO with **district** scores*	Difference*
N	430.8	472.4	41.6
White	30.2% (130)	26.1% (123)	-4.1%
African American	4.36% (19)	4.26% (20)	-0.1%
Hispanic	56.72% (244)	60.48% (286)	3.76%
Native American	2.92% (13)	2.98% (14)	0.06%
Asian American	2.42% (10)	1.86% (9)	-0.56%
Multiracial/Other	5.42% (23)	4.34% (21)	-1.08%
ExEd	8.08% (35)	9.7% (46)	1.62%
ELL	5.5% (24)	7.06% (33)	1.56%
FRL	57.94% (250)	59.84% (283)	1.9%

Relative proportion decreases
Relative proportion increases

Table 4: Comparison of number of Pull-Out GATE qualifiers and their demographic breakdown, depending upon score type used.

While these prospective improvements to equity and accessibility of GATE services are certainly something to be pleased about, we must also consider the potential impacts this shift may have on service provision. As seen in Table 3, use of district scores has the potential to nearly double the number of students identified as Self-Contained qualified. While many students who are offered SC placement do not accept it, the majority of those who decline opt instead for Pull-Out services at their neighborhood school. This may or may not result in a greater number of GATE-qualified students than the district has the capacity to serve. On the one hand, GATE enrollment at most sites has historically been well below capacity, lower testing numbers will also result in lower numbers of qualifying students, and many of the “additional” qualifiers may be students who would have been offered placement under the previous

local norms process already. At the same time, as the pandemic subsides, GATE testing cohorts may once again grow in size and produce enough qualifying students to overburden existing itinerant staff and the capacity at popular SC sites like Lineweaver Elementary.

It is important to remember that, for Self-Contained GATE services, qualification alone does not necessarily result in an offer of placement, however. Placement offers are subject to feeder site capacity and will be issued in a priority order described in detail later in this proposal. Historically, there has always been more than enough capacity available to issue placement offers to all students qualifying for SC services—indeed, the need to fill additional seats was what originally led to the use of the previous local norms placement process. Initial research by ALE indicates that the increased number of qualifiers is not likely to present a major problem for service capacity for at least the next three years. We believe this will allow sufficient time to hire and train new GATE teachers as needed.

PRACTICAL APPLICATION IN OFFERING PROGRAM PLACEMENT

Although TUSD is required by the state of Arizona to identify only those students in the 97th percentile or higher based on National Scores on a State Approved Exam (ARS§15-203 A. 15.), the district has served many students beyond this requirement. TUSD has the prerogative to extend Gifted Education Services to additional students as long as those in the 97th percentile are identified and offered services. As referenced earlier in this proposal, national scores are not the best as a student indicator of being “Gifted” given the demographic differences of our geographic location and student population. As a result, it is the intent of this proposal to supplement and increase the tools TUSD GATE has available to identify students who would benefit from GATE Services and ensure our programs’ classes are filled as close as possible to current capacity levels.

Historically, the process of local norms has been approved and utilized on a site by site basis, as needed. Through this proposal our hope is to create a district wide, statistically accurate process for identifying TUSD Gifted students uniformly and equitably. Although the potential is there, this proposal’s intent is **NOT** to aggressively expand the TUSD GATE Program, rather to standardize the process of identifying students eligible for GATE Services based on our local student population and assist in recuperating enrollment losses that occurred due to COVID-19.

In the application of district norms, we propose TUSD GATE Testing and Placement transitions to a placement offering process for TUSD students utilizing district norms rather than national norms. Student placement offers will be dependent on space availability, student home address. and test score rankings. Utilizing the above outlined processes for district norms, TUSD GATE Testing and Placement will be able to follow a prioritization model for student placement offers. The prioritization model will specifically be enacted for all GATE Self-Contained (SC) sites when open seats are available. The factors would be defined as follows:

1. Qualification Scores:
    a. District qualification score with a ranking based on total NCE scores
2. Student Address/Feeder Pattern:
    a. Neighborhood school
    b. GATE feeder pattern
    c. Non-GATE feeder pattern schools
3. Total NCE Scores

The factors outlined above would be utilized to assist staff in determining which students receive a GATE Self-Contained placement offer to fill open seats if there are multiple students competing for the same spot. The practice and intent of prioritizing one student over others for a given GATE Self-Contained seat would be to ensure a standardized practice that guides the equitable process of offering placements for GATE Self-Contained classrooms. Based on key factors mentioned above, this practice ensures schools and their Self-Contained Program’s student demographics reflect each other more closely.

Qualification Scores Considerations

To ensure equity for all students in the Tucson Unified School District, those who qualify for Self-Contained Services based on District Norms have the highest placement priority for GATE programs. If at any time there are more students eligible for a seat at a self-contained site than there are spaces available, offers will be given to students with the highest NCE until all spots are filled. Once all Self-Contained Program seats are filled, we would offer the remaining Self-Contained Qualifying students Cluster site placements. To accomplish this, we would utilize

our qualification criteria in addition to a rank order of students based on their total NCE scores to offer seats that are available.

The only exception to qualification scores being the first priority would be for families who have already been offered a self-contained placement to their GATE Feeder School, but the family is attempting to enroll in GATE Self-Contained School out of their feeder pattern. To preserve the equity of access district-wide for GATE Self-Contained programs to ensure all programs are being filled equitably, a student who qualifies for the Self-Contained Program and chooses to attend their feeder pattern would have priority over intra-district transfers. This practice is outlined in Table 5 below.

Student Address/Feeder Pattern Considerations

To assist in the placement of students in Self-Contained classrooms, the next consideration when looking at students would be the student's address to determine their feeder pattern. With the knowledge that Self-Contained sites were strategically selected in prior years to benefit specific student demographics, we propose students whose neighborhood school is the GATE Self-Contained site get first priority in attaining a placement into the GATE Self-Contained classroom. The second priority would be given to students who are in the GATE Feeder Pattern but do not have the Self-Contained school as their neighborhood school. To attract out of district families to our district, we would consider out of district students who have GATE qualifications for our 3rd priority groups. The last priority groups we would consider for placement into our self-contained program when looking at student addresses would be intra-district transfers. These students would receive last consideration because they already have a placement offer based on the factors listed above. This practice is outlined in Table 5 below.

Total NCE Scores

The last consideration utilized to determine a student's placement in the case there are multiple students with the same exact situation for considerations 1-2 would be a rank order of their total NCE scores. Students with the highest total NCE Scores will be given priority over students who are equal in all other areas.

	Consideration 1	Consideration 2	Consideration 3
Placement Offer Priority	**Qualification Scores**	**Student Address** (School Feeder Pattern)	**Total NCE Score**
1	Qualification Score	Neighborhood School	NCE Scores Rank
2	Qualification Score	GATE Feeder Pattern	NCE Scores Rank
3	Qualification Score	Out of District	NCE Scores Rank
4	Qualification Score	Out of GATE Feeder Pattern	NCE Scores Rank

Table 5: Outline of the proposed progressive priority order for equitably offering student placements in a GATE Program.

PROGRAM CAPACITY & SITE CAPACITY

Self-Contained GATE Program Capacity

As mentioned in the section above, this proposal is not intended to double the number of students receiving Gifted and Talented Education Services. Although this proposal does give TUSD GATE the significantly enhanced ability to identify a greater number of students, the process of implementing District Norms is intended to enhance our ability to accurately and diligently identify students to fill GATE programs based on district student populations and programmatic needs to ensure classrooms are appropriately filled.

Due to COVID-19, TUSD GATE programs have experienced a drop in student participation. In the process of projecting enrollment, with the assumption that all students in GATE programs do not leave our district, as well as identifying students based on the 5-year average rate of identification and enrollment to determine how many new students district-wide would receive services, we will not reach program capacity for another 9 years. These numbers are outlined in appendix B. The process outlined in this proposal would allow us to fill our programs to capacity in 3 years, a significantly shorter amount of time as seen in Appendix B.

Although this proposal is not intended to greatly increase the overall size of the program, it does allow the flexibility to utilize the practices outlined above which will assist in the continued expansion of services should it be deemed necessary in future years. An analysis of the impact of these practices will take place yearly as part of the ALE Continuous Improvement Cycle.

Pull-Out GATE Program Capacity

Although the primary focus of the norming process will be to fill Self-Contained sites to capacity, if a family/parent/guardian of a student does not want to switch schools, they can choose to either receive Pull-Out Services at their site or to decline GATE Services. The utilization and consideration for offering Pull-Out Program placements to students would allow GATE Testing and Placement to identify students more accurately at sites that had been under enrolled for Pull-Out services. This serves to ensure students receive additional developmental support from GATE Programs Staff based on the student population at said site.

The same intentionality will be occur when offering Pull-Out Services to students as there would be for Self-Contained services. Pull-Out services capacity on a given year would be equal to the number of Self-Contained students who do not choose to attend a Self-Contained Program in addition to Pull-Out qualified students. It is important to note that as shown in Table 6, the increase of students identified for Pull-Out Services will stay relatively the same. Any growth in the Pull-Out program would be a direct result of student identified for Self-Contained Services who opt to stay at their home site and receive Pull-Out Services.

School Year 2022-2023 GATE Self-Contained Qualification Numbers

To shed a clearer light on the impact of the implementation of District Norms will have on the accessibility to Gifted and Talented Education Programs, Table 7 highlights the additional number of students who would qualify for Self-Contained Services by school and ethnicity. Through the use of District Norms, we will be able to identify a substantially larger percentage of Asian American students (9 additional students accounting for a 9.57% increase in representation), White students (104 additional students accounting for a 9.52% increase in representation), Hispanic students (143 additional students accounting for a 4.45% increase in representation) as well as African American students (21 additional students accounting for a 3.98% increase in representation). The utilization of District Norms, over time, will assist in ensuring that the percentage of students having access to and enrolling in Self-Contained and Pull-Out services will be more closely representative of TUSD overall student demographics.

When looking at these numbers it is imperative to understand that at the current moment, there are a large number of students who only qualify for Pull-Out Services who have been provisionally enrolled in Self-Contained Services to assist in ensuring minimum classroom sizes are met. These students are already part of the program and would largely qualify for Self-Contained services through the District Norms Model. Because of this, it is important to understand a District Norm model would primarily serve to bolster the efficacy and equity in which we are offering students and families access to the Gifted and Talented Education Programs.

Additional Self-Contained Offers for SY 22-23 based on only District Norms by School and Ethnicity							
School	**African American**	**Asian American**	**Hispanic**	**Multiracial**	**Native American**	**White/Anglo**	**Grand Total**
Doolen Middle School	2	1	11	1	0	9	24
Kellond Elementary	3	0	9	2	0	30	44
Lineweaver Elementary	5	3	27	0	2	21	58
Naylor K-8 (with Roberts)	4	1	12	1	0	8	26
Pistor Middle School	2	0	16	0	0	1	19
Vail Middle School	1	1	12	0	0	12	26
Wheeler Elementary	2	2	11	1	0	5	21
White Elementary	2	1	45	1	5	18	72
Grand Total	21	9	143	6	7	104	290
Total Students Tested	**528**	**94**	**3217**	**209**	**183**	**1092**	**5323**
Percent Increase in Identification	3.98%	9.57%	4.45%	2.87%	3.83%	9.52%	5.45%

Table 7: This table breaks down additional Self-Contained GATE student placement offers that could be sent out by the school they would be offered placement for during the 2022-2023 school year as well as student ethnicity.

CONCLUSION

Based on the research and practical applications presented here, A&E and ALE are confident that district-wide use of local norms will improve access to GATE services for demographic groups that are currently underrepresented. Additionally, we believe that the systematic and statistically rigorous approach proposed here will:

- Eliminate opportunities for conscious or unconscious bias
- Improve the reliability of existing GATE qualification/placement methods
- Improve the accuracy with which GATE testing identifies giftedness among subpopulations
- Correct for inequities that have emerged as a result of nationally normed standard scores
- Be replicable by other personnel in the future
- Result in processes that can be transparently and clearly communicated to stakeholders
- Create opportunities for students who would not previously have had them

If you have questions on this proposal, feel free to contact Alyson Robles-Hill or Roberto Cruze at your convenience by email at Alyson.RoblesHill@tusd1.org and Roberto.Cruze@tusd1.org respectively. You can also contact us by phone at 520-225-3212 or 520-225-1309 respectively.

Thank you for your consideration.

Alyson Robles-Hill, MPP
Research Project Manager
Assessment and Evaluation
Tucson Unified School District
Phone: 520-225-3212
E-mail: alyson.robleshill@tusd1.org

Roberto Cruze, M.S., M.B.A.
Senior Coordinator, ALE Testing, Placement and Recruitment
Advanced Learning Experiences
Tucson Unified School District
Phone: 520-225-1309
E-mail: Roberto.Cruze@tusd1.org

Appendix A: Student Acceptance Rate Calculations by Year

Newly Qualified Gate Student Placement Acceptance Numbers by Program and School Year of Enrollment

Student Qualification Numbers				Student Enrollment based on Qualifications				
Qual year	Enrollment year	Students Tested	SC qual	SC enrolled	PO enrolled	Resource enrolled	Non-GATE*	Non-TUSD**
1516	1617	10,259	785	217	329	50	85	104
1617	1718	9,061	608	205	248	21	53	81
1718	1819	10,523	643	230	224	26	64	99
1819	1920	10,136	572	162	217	28	65	100
1920	2021	7,645	523	154	194	24	63	88
Average Numbers for SY 1617-SY2021		9,525	626	194	242	30	66	94

*Students who declined services.

**Students who declined services and left the district.

Newly Qualified Gate Student Placement Acceptance Rates by Program and School Year of Enrollment

Student Qualification Numbers				Student Enrollment based on Qualifications				
Qual year	Enrollment year	Students Tested	SC qual	SC enrolled	PO enrolled	Resource Enrolled	Non-GATE*	Non-TUSD**
1516	1617	10,259	7.7%	27.6%	41.9%	6.4%	10.8%	13.2%
1617	1718	9,061	6.7%	33.7%	40.8%	3.5%	8.7%	13.3%
1718	1819	10,523	6.1%	35.8%	34.8%	4.0%	10.0%	15.4%
1819	1920	10,136	5.6%	28.3%	37.9%	4.9%	11.4%	17.5%
1920	2021	7,645	6.8%	29.4%	37.1%	4.6%	12.0%	16.8%
Average Percentage for SY 1617-SY2021		**9,525**	**6.6%**	**31.0%**	**38.5%**	**4.7%**	**10.6%**	**15.3%**

*Students who declined services.

**Students who declined services and left the district.

Appendix B: Enrollment Projections

Total SC Enrollment Projections Based on National Norms Only*	
School Year	**# of Students**
SY 22/23	1,037
SY 23/24	1,090
SY 24/25	1,163
SY 25/26	1,236
SY 26/27	1,309
SY 27/28	1,382
SY 28/29	1,455
SY 29/30	1,528
SY 30/31	1,601
SY 31/32**	**1,674**

Total SC Enrollment Projections Based on National & District Norms*	
School Year	**# of Students**
SY 22/23	1243
SY 23/24	1502
SY 24/25***	1761
SY 25/26***	2020
SY 26/27***	2279
SY 27/28***	2538
SY 28/298***	2797
SY 29/30***	3056
SY 30/31***	3315
SY 31/32***	3574

* Assuming 140 GATE Students Transitioning Out Yearly (accounts for 20 students per classroom)

** District Consensus Capacity for SC GATE is 1,698

*** District Consensus Maximum Capacity for SC GATE enrollment before Adding Additional Teacher is between 1,699-1930

**** All projection numbers are derived through the assumption that overall TUSD Enrollment will remain static over time.

Appendix C: Current GATE Pull-Out Program Enrollment

SY 2122 Current Enrollment for GATE Pull-Out Services		
School	**SY 2122 Student Total**	**Percent of Total Enrollment**
Banks Elementary	15	1.15%
Blenman Elementary	8	0.61%
Bloom Elementary	26	1.99%
Bonillas Basic Curriculum Magnet	14	1.07%
Booth-Fickett Math/Science K-8	12	0.92%
Borman K-8	28	2.15%
Borton Magnet Elementary	39	2.99%
Carrillo K-5 Magnet	35	2.68%
Cavett Elementary	13	1.00%
Collier Elementary	9	0.69%
Cragin Elementary	15	1.15%
Davidson Elementary	9	0.69%
Davis Bilingual Elementary Magnet	52	3.98%
Dietz K-8	7	0.54%
Drachman K-8 Montessori Magnet	28	2.15%
Dunham Elementary	16	1.23%
Erickson Elementary	12	0.92%
Ford Elementary	9	0.69%
Fruchthendler Elementary	103	7.89%
Gale Elementary	44	3.37%
Grijalva Elementary	16	1.23%
Henry Elementary	22	1.69%
Holladay Magnet Elementary	8	0.61%
Hollinger K-8	9	0.69%
Howell Elementary	13	1.00%
Hudlow Elementary	7	0.54%
Hughes Elementary	104	7.97%
Johnson Primary	6	0.46%
Kellond Elementary	18	1.38%
Lawrence 3-8	14	1.07%
Lineweaver Elementary	25	1.92%
Lynn/Urquides Elementary	13	1.00%
Maldonado Elementary	7	0.54%
Manzo Elementary	21	1.61%
Marshall Elementary	19	1.46%
Mary Belle McCorkle Academy of Excellence K-8	32	2.45%
Miles Exploratory Learning Center K-8	33	2.53%

Miller Elementary	19	1.46%
Mission View Elementary	7	0.54%
Morgan Maxwell K-8	10	0.77%
Myers/Ganoung Elementary	10	0.77%
Naylor K-8 (with Roberts)	6	0.46%
Ochoa Elementary	5	0.38%
Oyama Elementary	9	0.69%
Pueblo Gardens K-8	9	0.69%
Robins K-8	38	2.91%
Robison Elementary	7	0.54%
Rose K-8	22	1.69%
Roskruge Bilingual K-8 Magnet	16	1.23%
Safford K-8	10	0.77%
Sewell Elementary	14	1.07%
Soleng Tom Elementary	26	1.99%
Steele Elementary	17	1.30%
Tolson Elementary	19	1.46%
Tucson Unified Virtual Academy	94	7.20%
Van Buskirk Elementary	13	1.00%
Vesey Elementary	25	1.92%
Warren Elementary	14	1.07%
Wheeler Elementary	9	0.69%
White Elementary	23	1.76%
Whitmore Elementary	8	0.61%
Wright Elementary	14	1.07%

Appendix D: Total Projected GATE Pull-Out Program Enrollment

10-Year Projected Total Enrollment* for Pull-Out Services										
School	**SY 22/23**	**SY 23/24**	**SY 24/25**	**SY 25/26**	**SY 26/27**	**SY 27/28**	**SY 28/29**	**SY 29/30**	**SY 30/31**	**SY 31/32**
Total Projected Enrollment	1,425	1,545	1,607	1,669	1,731	1,793	1,855	1,917	1,979	2,041

* Pull-Out Program enrollment Projections assume an average 5th Grade class size matriculating out of Pull-Out Services of 218 year over year and average new students identified number of 336 per year. The 336 new identifications number was calculated by adding Average PO enrollment from SY1617 to the Average Non-TUSD Enrollment from SY1617 to account for student mobility into TUSD from other districts as shown in Appendix A.

** All projection numbers are derived through the assumption that overall TUSD Enrollment will remain static over time.

Appendix E: Projected GATE Pull-Out Program Enrollment by School

10-year Projected Enrollment* for Pull-Out Services										
School	**SY 22/23**	**SY 23/24**	**SY 24/25**	**SY 25/26**	**SY 26/27**	**SY 27/28**	**SY 28/29**	**SY 29/30**	**SY 30/31**	**SY 31/32**
Banks Elementary	16	17	18	19	20	21	22	23	24	25
Blenman Elementary	9	10	11	12	13	14	15	16	17	18
Bloom Elementary	28	30	31	32	33	34	35	36	37	38
Bonillas Basic Curriculum Magnet	15	16	17	18	19	20	21	22	23	24
Booth-Fickett Math/Science K-8	13	14	15	16	17	18	19	20	21	22
Borman K-8	31	34	35	36	37	38	39	40	41	42
Borton Magnet Elementary	43	47	48	49	50	51	52	53	54	55
Carrillo K-5 Magnet	38	41	42	43	44	45	46	47	48	49
Cavett Elementary	14	15	16	17	18	19	20	21	22	23
Collier Elementary	10	11	12	13	14	15	16	17	18	19
Cragin Elementary	16	17	18	19	20	21	22	23	24	25
Davidson Elementary	10	11	12	13	14	15	16	17	18	19
Davis Bilingual Elementary Magnet	57	62	63	64	65	66	67	68	69	70
Dietz K-8	8	9	10	11	12	13	14	15	16	17
Drachman K-8 Montessori Magnet	31	34	35	36	37	38	39	40	41	42
Dunham Elementary	17	18	19	20	21	22	23	24	25	26
Erickson Elementary	13	14	15	16	17	18	19	20	21	22
Ford Elementary	10	11	12	13	14	15	16	17	18	19
Fruchthendler Elementary	112	121	122	123	124	125	126	127	128	129
Gale Elementary	48	52	53	54	55	56	57	58	59	60
Grijalva Elementary	17	18	19	20	21	22	23	24	25	26
Henry Elementary	24	26	27	28	29	30	31	32	33	34
Holladay Magnet Elementary	9	10	11	12	13	14	15	16	17	18
Hollinger K-8	10	11	12	13	14	15	16	17	18	19

Howell Elementary	14	15	16	17	18	19	20	21	22	23
Hudlow Elementary	8	9	10	11	12	13	14	15	16	17
Hughes Elementary	113	122	123	124	125	126	127	128	129	130
Johnson Primary	7	8	9	10	11	12	13	14	15	16
Kellond Elementary	20	22	23	24	25	26	27	28	29	30
Lawrence 3-8	15	16	17	18	19	20	21	22	23	24
Lineweaver Elementary	27	29	30	31	32	33	34	35	36	37
Lynn/Urquides Elementary	14	15	16	17	18	19	20	21	22	23
Maldonado Elementary	8	9	10	11	12	13	14	15	16	17
Manzo Elementary	23	25	26	27	28	29	30	31	32	33
Marshall Elementary	21	23	24	25	26	27	28	29	30	31
Mary Belle McCorkle Academy of Excellence K-8	35	38	39	40	41	42	43	44	45	46
Miles Exploratory Learning Center K-8	36	39	40	41	42	43	44	45	46	47
Miller Elementary	21	23	24	25	26	27	28	29	30	31
Mission View Elementary	8	9	10	11	12	13	14	15	16	17
Morgan Maxwell K-8	11	12	13	14	15	16	17	18	19	20
Myers/Ganoung Elementary	11	12	13	14	15	16	17	18	19	20
Naylor K-8 (with Roberts)	7	8	9	10	11	12	13	14	15	16
Ochoa Elementary	5	5	6	7	8	9	10	11	12	13
Oyama Elementary	10	11	12	13	14	15	16	17	18	19
Pueblo Gardens K-8	10	11	12	13	14	15	16	17	18	19
Robins K-8	41	44	45	46	47	48	49	50	51	52
Robison Elementary	8	9	10	11	12	13	14	15	16	17
Rose K-8	24	26	27	28	29	30	31	32	33	34
Roskruge Bilingual K-8 Magnet	17	18	19	20	21	22	23	24	25	26
Safford K-8	11	12	13	14	15	16	17	18	19	20
Sewell Elementary	15	16	17	18	19	20	21	22	23	24

Soleng Tom Elementary	28	30	31	32	33	34	35	36	37	38
Steele Elementary	19	21	22	23	24	25	26	27	28	29
Tolson Elementary	21	23	24	25	26	27	28	29	30	31
Tucson Unified Virtual Academy	103	112	113	114	115	116	117	118	119	120
Van Buskirk Elementary	14	15	16	17	18	19	20	21	22	23
Vesey Elementary	27	29	30	31	32	33	34	35	36	37
Warren Elementary	15	16	17	18	19	20	21	22	23	24
Wheeler Elementary	10	11	12	13	14	15	16	17	18	19
White Elementary	25	27	28	29	30	31	32	33	34	35
Whitmore Elementary	9	10	11	12	13	14	15	16	17	18
Wright Elementary	15	16	17	18	19	20	21	22	23	24
Total Projected Enrollment	1,425	1,545	1,607	1,669	1,731	1,793	1,855	1,917	1,979	2,041

* Pull-Out Program enrollment Projections assume an average 5th Grade class size matriculating out of Pull-Out Services of 218 year over year and average new students identified number of 336 per year. The 336 new identifications number was calculated by adding Average PO enrollment from SY1617 to the Average Non-TUSD Enrollment from SY1617 to account for student mobility into TUSD from other districts as shown in Appendix A.

** All projection numbers are derived through the assumption that overall TUSD Enrollment will remain static over time.

Appendix F: National Norms Self-Contained Offers for SY 2022-2023

GATE Self-Contained Offers for SY 22-23 Sent based on only National Norms by School and Ethnicity							
School	**African American**	**Asian American**	**Hispanic**	**Multiracial**	**Native American**	**White/ Anglo**	**Grand Total**
Doolen Middle School	7	1	30	5	0	28	71
Hollinger K-8	0	0	2	0	0	0	2
Kellond Elementary	2	2	20	5	1	45	75
Lineweaver Elementary	9	7	21	10	0	54	101
Naylor K-8 (with Roberts)	8	2	18	2	0	15	45
Pistor Middle School	3	0	45		3	9	60
Vail Middle School	5	0	27	7	0	28	67
Wheeler Elementary	8	4	20	3	0	19	54
White Elementary	2	1	68	3	2	20	96
Grand Total	**44**	**17**	**251**	**35**	**6**	**218**	**571**
Total Students Tested	**528**	**94**	**3217**	**209**	**183**	**1092**	**5323**
Percent of Students Tested	**8.33%**	**18.09%**	**7.80%**	**16.75%**	**3.28%**	**19.96%**	**10.73%**

GATE Self-Contained Offers for SY 22-23 based on only National Norms by School and Ethnicity for Student Who Are Not Already Provisionally Self-Contained Placed							
School	**African American**	**Asian American**	**Hispanic**	**Multiracial**	**Native American**	**White/ Anglo**	**Grand Total**
Doolen Middle School	5	0	26	4	0	23	58
Kellond Elementary	2	2	13	4	0	34	55
Lineweaver Elementary	6	6	17	9	0	47	85
Naylor K-8 (with Roberts)	2	2	9	1	0	12	26
Pistor Middle School	2	0	21		1	5	29
Vail Middle School	1	0	14	4	0	22	41
Wheeler Elementary	3	2	11		0	12	28
White Elementary	2	1	45	3	0	18	69
Grand Total	**23**	**13**	**156**	**25**	**1**	**173**	**391**
Total Students Tested	**528**	**94**	**3217**	**209**	**183**	**1092**	**5323**
Percent of Students Tested	**4.36%**	**13.83%**	**4.85%**	**11.96%**	**0.55%**	**15.84%**	**7.35%**

Appendix G: District Norms Self-Contained Offers for SY 2022-2023

GATE Self-Contained Offers for SY 22-23 Sent based on only District Norms by School and Ethnicity							
School	**African American**	**Asian American**	**Hispanic**	**Multiracial**	**Native American**	**White/ Anglo**	**Grand Total**
Doolen Middle School	9	2	41	6		37	95
Hollinger K-8			2				2
Kellond Elementary	5	2	29	7	1	75	119
Lineweaver Elementary	14	10	48	10	2	75	159
Naylor K-8 (with Roberts)	12	3	30	3		23	71
Pistor Middle School	5		61		3	10	79
Vail Middle School	6	1	39	7		40	93
Wheeler Elementary	10	6	31	4		24	75
White Elementary	4	2	113	4	7	38	168
Grand Total	**65**	**26**	**394**	**41**	**13**	**322**	**861**
Total Students Tested	**528**	**94**	**3217**	**209**	**183**	**1092**	**5323**
Percent of Students Tested	**12.31%**	**27.66%**	**12.25%**	**19.62%**	**7.10%**	**29.49%**	**16.18%**

GATE Self-Contained Offers for SY 22-23 Based on Only District Norms by School and Ethnicity for Student Who Are Not Already Provisionally Self-Contained Placed							
School	**African American**	**Asian American**	**Hispanic**	**Multiracial**	**Native American**	**White/ Anglo**	**Grand Total**
Doolen Middle School	7	1	37	5		32	82
Kellond Elementary	5	2	22	6		64	99
Lineweaver Elementary	11	9	44	9	2	68	143
Naylor K-8 (with Roberts)	6	3	21	2		20	52
Pistor Middle School	4		37		1	6	48
Vail Middle School	2	1	26	4		34	67
Wheeler Elementary	5	4	22	1		17	49
White Elementary	4	2	90	4	5	36	141
Grand Total	**44**	**22**	**299**	**31**	**8**	**277**	**681**
Total Students Tested	**528**	**94**	**3217**	**209**	**183**	**1092**	**5323**
Percent of Students Tested	**8.33%**	**23.40%**	**9.29%**	**14.83%**	**4.37%**	**25.37%**	**12.79%**

Appendix H: Comparison of National and District Norm Self-Contained Offers for SY 2022-2023

Additional Self-Contained Offers for SY 22-23 based on only District Norms by School and Ethnicity							
School	**African American**	**Asian American**	**Hispanic**	**Multiracial**	**Native American**	**White/ Anglo**	**Grand Total**
Doolen Middle School	2	1	11	1	0	9	24
Kellond Elementary	3	0	9	2	0	30	44
Lineweaver Elementary	5	3	27	0	2	21	58
Naylor K-8 (with Roberts)	4	1	12	1	0	8	26
Pistor Middle School	2	0	16	0	0	1	19
Vail Middle School	1	1	12	0	0	12	26
Wheeler Elementary	2	2	11	1	0	5	21
White Elementary	2	1	45	1	5	18	72
Grand Total	21	9	143	6	7	104	290
Total Students Tested	**528**	**94**	**3217**	**209**	**183**	**1092**	**5323**
Percent Increase in Identification	**3.98%**	**9.57%**	**4.45%**	**2.87%**	**3.83%**	**9.52%**	**5.45%**

Additional Self-Contained Offers for SY 22-23 Based on only District Norms by School and Ethnicity for Student Who Are Not Already Provisionally Self-Contained Placed							
School	**African American**	**Asian American**	**Hispanic**	**Multiracial**	**Native American**	**White/Anglo**	**Grand Total**
Doolen Middle School	2	1	11	1	0	9	24
Kellond Elementary	3	0	9	2	0	30	44
Lineweaver Elementary	5	3	27	0	2	21	58
Naylor K-8 (with Roberts)	4	1	12	1	0	8	26
Pistor Middle School	2	0	16	0	0	1	19
Vail Middle School	1	1	12	0	0	12	26
Wheeler Elementary	2	2	11	1	0	5	21
White Elementary	2	1	45	1	5	18	72
Grand Total	21	9	143	6	7	104	290
Total Students Tested	**528**	**94**	**3217**	**209**	**183**	**1092**	**5323**
Percent Change	**3.98%**	**9.57%**	**4.45%**	**2.87%**	**3.83%**	**9.52%**	**5.45%**

Number and Percent Difference of Self-Contained Qualifying Students Identified District Wide by Ethnicity during SY 2021-2022 Testing							
	African American	**Asian American**	**Hispanic**	**Multiracial**	**Native American**	**White/Anglo**	**Grand Total**
Number Tested	**528**	**94**	**3217**	**209**	**183**	**1092**	**5323**
Number of Students identified with National Norms	23	13	156	25	1	173	391
Percent of Students identified with National Norms	4.36%	13.83%	4.85%	11.96%	0.55%	15.84%	7.35%
Number of Students identified with District Norms	44	22	299	31	8	277	681
Percent of Students identified with District Norms	8.33%	23.40%	9.29%	14.83%	4.37%	25.37%	12.79%
Difference of Additional Students Identified	21	9	143	6	7	104	290
Percent Difference of Additional Students identified	**3.98%**	**9.57%**	**4.45%**	**2.87%**	**3.83%**	**9.52%**	**5.45%**

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Effect of Local Norms on Racial and Ethnic Representation in Gifted Education

Scott J. Peters
University of Wisconsin–Whitewater

Karen Rambo-Hernandez
West Virginia University

Matthew C. Makel
Duke University

Michael S. Matthews
University of North Carolina–Charlotte

Jonathan A. Plucker
Johns Hopkins University

Educators have sought to understand and address the disproportional representation of students from certain student subgroups in gifted education. Most gifted identification decisions are made with national comparisons where students must score above a certain percentage of test takers. However, this approach is not always consistent with the overall goal of gifted education. Scholars have long argued for the use of local normative criteria to increase the diversity of students identified for gifted services, and although some districts across the country have applied such recommendations, little research has been carried out. In this study, we use a large data set to assess the extent to which identifying gifted students with either school-level norms or a combination of national and school-level norms would improve gifted education representation rates for students who are from African American and Latinx families. A preprint of this registered report and this project's preregistration documentation are available at https://osf.io/z2egy/.

Keywords: *assessment, descriptive analysis, diversity, equity, gifted education, hierarchical linear modeling, policy analysis*

Disproportionality rates have been reported along racial/ethnic lines in areas including school discipline, average test scores, hiring practices, college enrollment, and a host of other important student outcomes (e.g., Cruz & Rodl, 2018; Gupta-Kagan, 2017; U.S. Department of Education, 2016; Williams, Bryant-Mallory, Coleman, Gotel, & Hall, 2017). Furthermore, disproportionality is evident in rates of enrollment in K–12 gifted education programs by certain racial, ethnic, income, language, and disability subgroups (e.g., Peters, Gentry, Whiting, & McBee, 2019; Yoon & Gentry, 2009), and gifted education has been challenged on the basis of equity and corresponding concerns about whether its practices exacerbate inequality across student subgroups (e.g., Garland, 2013). Much of this criticism arises from the observation that students served by gifted education programs tend to be from European American, Asian American, or upper-income backgrounds—an observation that has been documented since at least the 1970s (Peters et al., 2019; Yoon & Gentry, 2009).

Not surprisingly, gifted identification disparities occur alongside large differences in rates of advanced performance among subgroups of students, a phenomenon known as *excellence gaps* (Plucker, Hardesty, & Burroughs, 2013). For example, on the 2017 National Assessment of Educational Progress (NAEP) mathematics assessment for Grade 4 students, 2% of African American and 3% of Hispanic[1] students scored at the advanced level, whereas 24% of Asian American and 11% of European American students[2] scored in the

advanced range. These stark differences in advanced performance will have far-reaching cultural and economic implications if they remain unaddressed, because the subgroups less frequently performing at advanced levels now represent well over half of the U.S. student population (Plucker & Peters, 2018).

Although the causal mechanisms behind excellence gaps have yet to be explored, Plucker and Peters (2018) suggested that disproportional access to advanced educational services vis-à-vis disproportionality in gifted identification is one of the drivers. The presence of disproportionality suggests that many students who remain unidentified would benefit from placement into gifted education programming. In this article, we explore one potential route to shrinking such disproportionality in gifted program participation: the use of local building-level norms.

Quantifying Disproportionality

Disproportional representation has been quantified in three related ways, each with its own strengths and weaknesses: aggregate numbers, enrollment relative to base rate, and conditional probability of identification. The first approach expresses disproportionality in terms of aggregate numbers of identified students. For example, on the 2017 NAEP mathematics assessment for fourth graders, African American students showed a mean score of 223, as opposed to a mean score of 248 for European American students. This difference is almost a full standard deviation. If students were identified as gifted on the basis of a score on this or similar measures of academic achievement, fewer African American students would be identified than European American students—thereby resulting in aggregate racial disparities. Although measuring underrepresentation in this manner is appealing in its simplicity, it fails to account for the proportionality of each group within the larger student population (i.e., the base rate). In other words, one would expect to find smaller numbers of African American students identified as gifted because African Americans also constitute a smaller percentage of the overall student population, but this is not clear from the raw numbers alone.

Enrollment relative to base rate, often called a *representation index*, offers an improvement over aggregate numbers by reporting the proportion of students identified from each group relative to their proportion in the overall student population. A representation index is a form of the general relative risk calculation and is the ratio between any given group's representation in the identified gifted population and its representation in the overall student population. This is the approach most frequently used in education research, including studies of disproportionality in other areas of education, such as special education services (e.g., Morgan, Farkas, Hillemeier, & Maczuga, 2017) and school discipline (e.g., Gregory, Cornell, & Fan, 2011). For example, Peters et al. (2019) found that African American and Latinx students were represented in identified gifted populations at approximately 57% and 70% of these students' prevalence in the overall K–12 student population. At the same time, students who self-identified as Asian American or European American were 201% or 118% as represented in identified gifted populations, respectively, as in the overall K–12 population.

A third way to operationalize disproportionality is to look at the probability of a student being identified after controlling for relevant background factors (conditional probability of identification). This method has received increased attention in the field of special education (see Morgan et al., 2017) because it better distinguishes *disproportional representation* from *underrepresentation*; the latter term implies what a group's representation actually should be, which raw numbers or even relative percentages cannot fully address. As compared with the previous two methods, the identification probability approach evaluates disproportionality while attempting to control for background factors known to be relevant, thereby allowing a determination of whether and to what extent a student's ethnicity or other characteristic taken in isolation may drive disproportionality.

Using the identification probability approach, Siegle, McCoach, Gubbins, Long, and Hamilton (2018) found that even after controlling for third-grade reading achievement, mathematics achievement, student demographics, school and district socioeconomic status, school and district achievement, and the percentage of students identified as gifted in the district and school, students from African American, Latinx, or low-income families remained less likely to be identified for gifted education services. Grissom and Redding (2016) found similar results but with additional nuance: for Hispanic students, the gap in probability of identification was fully explained after controlling for student background factors, such as prior achievement and family income. The same could not be said for the gap in identification probability for African American students, for whom the race of the teacher was also a contributing factor. These studies' findings suggest that it is not simply lower group mean scores that prevent underrepresented students from being identified but that additional factors also influence a student's probability of being identified as gifted (see also Hamilton et al., 2018).

The benefit to considering disproportionality through the lens of identification probability is that this approach controls for other relevant background factors, thus clarifying the source of the disproportionality. Observed mean score differences on standardized tests can be included in a model that allows race or ethnicity to be examined in isolation from other potentially confounding variables. Although the identification probability approach is important from a basic science perspective, it may be less helpful from a policy

perspective because applying such conditional identification methods in schools would be complex; hence, both perspectives are useful—identification probability and enrollment relative to base rate.

Gifted Identification Policy and Practice

The difference between gifted education and other areas of exceptional student education is that the procedures for deciding which students are served in gifted education vary widely across and within states. The number of students identified as gifted depends largely on policies developed at the state and local levels, and these vary widely across different gifted education models as well as in actual practice (Callahan, Moon, & Oh, 2014). The National Association for Gifted Children has suggested the overall prevalence of gifted students as including the top 10% or less within a given domain. Some states (e.g., Arizona) mandate a fixed percentage, such as 3% based on a national norm. Renzulli's three-ring model (1978, 2005), used in many schools across the United States, suggests that roughly 15% of students should be identified for gifted services.

Criteria for identifying a visual impairment or a learning disability are relatively consistent across settings due to their basis in federal law, but this is not the case for the identification of a student as gifted. A survey by the National Research Center on the Gifted and Talented (Callahan et al., 2014) highlighted just how widely gifted identification practice and outcomes vary. These authors found that across settings at the elementary level nationwide, the percentage of students identified as gifted ranged from zero to 50%. This extreme variability is due in part to variability in school populations but also to the processes by which students are selected, which vary widely by location. Some states mandate a strict IQ score–based process (e.g., Florida, New Mexico), while others (e.g., North Carolina) delegate many aspects of the process to the local school district. Research by Carman, Walther, and Bartsch (2018) and by Peters and Gentry (2012) adopted a range of cut points as proxies for gifted identification rates, including the top 5%, 10%, or even 25%. Because of the lack of consensus regarding the actual percentage of the population that should be labeled gifted, for the purposes of this article we chose to model two gifted identification rates (5% and 15%) to reflect the range of rates found in actual gifted education settings across the United States.

Cut scores with national norms. A common identification practice across many gifted education settings is the use of cut scores based on national performance metrics. A national norm is most often applied, as in Arizona: "School districts . . . shall identify as gifted at least those pupils who score at or above the ninety-seventh percentile, based on national norms, on a test adopted by the state board of education" (Arizona State Legislature, n.d., 1A). Although academic achievement, ability, and aptitude (including intelligence tests) are the tools most widely used for gifted identification (National Association for Gifted Children, 2015), details of how these tools are used are often less clear; Arizona is an exception in its explicit reference to national norms. Georgia too refers to national norms in its state-mandated gifted identification policy: "Evidence of student performance on a nationally normed standardized test of mental ability, achievement, and creativity" (Georgia Department of Education, 2017, p. 4). However, any "nationally normed" standardized test can be used to collect student performance data, and raw scores can be evaluated with a range of scoring norms, making the actual prevalence of national norm usage unknown.

Limitations of national norm comparisons. Most state and district policies do not specify the norm group to be used when identification decisions are being made. However, those that reference specific scores or percentiles, such as Arizona and Georgia, reference nationally normed instruments. This suggests that national norms are the standard reference group for norm-referenced identification criteria. For example, Tennessee refers to students scoring at or above the 94th percentile—presumably on a national norm (State of Tennessee, 2017). The ubiquity of national norms may be due to convenience, as normative studies with nationally representative samples are typically part of any instrument's development. However, there are at least two problems inherent in this use of national norms. First, students are not randomly assigned to schools; rather, attendance is based largely on residence in local neighborhoods that, in turn, are often highly segregated by income, ethnicity, and other differences. Thus, across schools, national norm comparisons yield drastically different numbers of students identified as gifted. For example, if half of an extremely high-performing school is performing at or above the 95th percentile on a national norm and the 95th percentile is set as the criterion, then half of that school's population would be labeled gifted. With this same cutoff, other schools whose populations are lower achieving overall would identify zero students as gifted.

Second, relying on national norms stands in potential conflict with the current federal definition of giftedness: "Children and youth with outstanding talent perform or show the potential for performing at remarkably high levels of accomplishment *when compared with others of their age, experience, or environment*" (U.S. Department of Education, 1993, p. 3, emphasis added). National norms offer a uniform standard that appears to promote fairness. Typically, they are age based, but otherwise, the extent to which they address student experience or environment is unclear. Two students in the same classroom who grew up as neighbors may have had vastly different educational opportunities, none of which

would be captured by comparing their performance with a national norm. These challenges have led some scholars (Lohman, 2005, 2009; Peters & Gentry, 2012; Plucker & Peters, 2016; Worrell, 2018), advocacy groups (Yaluma & Tyner, 2018), major professional organizations (American Educational Research Association, American Psychological Association, & National Council for Measurement in Education, 2014), and state policies (e.g., Illinois, New Jersey) to call for the use of building-level norms when test score data are used to make gifted placement decisions. Colorado also has endorsed the use of local norms if the school district "determines that such data will enhance services to student groups who may in the future qualify for gifted identification under national norms and/or performance demonstrations" (Colorado Department of Education, 2016, p. 12).

Case for building-level local norms. In this article, we use "local norms" to refer to ranked performance within the school building. This means that the reference group for the gifted identification process is the student's same-grade peers within a given building. Instead of different schools in the same district (or state) having a different proportion of students identified, every school using local norms and a common cutoff would have the same proportion of students identified to receive gifted program services. If the cut score is the top 5% of each building, then each building will always identify 5% of its students as gifted. The logic behind this approach is that these are the students most likely to go underchallenged and thus in need of additional services to be appropriately challenged. From an administrative point of view, identifying consistent numbers of students within schools also simplifies instructional planning: staff allocation is more predictable because the number of students served does not vary as widely across buildings or from one year to the next as when national norms are used to identify learners for gifted services.

The philosophical argument in favor of building-level norms is that within-building peers are a better proxy for experience and environment than are all same-age students from across the country (Peters & Engerrand, 2016). It is at the local building level that most gifted education services are delivered; therefore, the building-level norm is likely the approach most consistent with the intent of the federal definition of giftedness. Furthermore, the purpose of gifted education is to provide identified students with opportunities to be appropriately challenged in their zone of proximal development (Peters, Rambo-Hernandez, Makel, Matthews, & Plucker, 2017) or, as Stanley (2000) put it, to have students learn "only what they don't already know" (p. 216). From this perspective, the role of gifted identification is to place these students into services that are necessary to meet their particular learning needs. Local norms are better suited than national norms to finding the students who are most likely to be underchallenged in their current learning environment.

Implications of local norm comparisons. There are two important implications to using building norms. First, they likely result in varying levels of content mastery being needed to qualify for services depending on which school a child attends, even within the same school district (Carmen et al., 2018), thus making implementation potentially difficult. Second, they may not be as closely connected to broader external metrics, such as "grade level" or "college readiness" measures. The former issue is probably inevitable, although it simply reflects the wide variation in performance levels that already exists across schools, while the latter issue can easily be addressed by retaining national norms for any such comparisons.

Combining multiple criteria. Many gifted identification processes require that multiple criteria be met, often in the form of multiple test scores exceeding certain criteria. The manner in which these criteria are combined can have a strong influence not just on who is identified but also on how many students are identified as gifted (Lakin, 2018; McBee, Peters, & Miller, 2016; McBee, Peters, & Waterman, 2014). To make the eligibility decision, multiple criteria can be combined by using *and* rules (e.g., students need both Criterion 1 and Criterion 2), by using *or* rules (e.g., students need Criterion 1 or Criterion 2), or by using a *mean* rule (e.g., averages of criteria are used). Any of these combination rules can be used with any norm type. Using the *or* combination rule for national and building norms could serve as a compromise between these two disparate approaches. Under this approach, students would be identified if they met either the national norm criterion or the building norm criterion (e.g., top 5% in the nation *or* top 5% in the building). Such a policy would remove any decrease in the number of identified students at overall high-achieving schools while placing a floor on the number of identified students at lower-achieving schools, thus taking advantage of the strengths of each approach.

Combining these approaches has not systematically been considered in the literature, nor has the diversity of the resultant identified population ever been evaluated. The aim of this article is to examine the outcomes of these approaches by modeling them with real data.

Hypotheses

To evaluate the potential of building-level norms to increase the diversity of identified gifted populations, we proposed the following general hypothesis: The more proximate the normative group used for gifted identification decisions, the more racially and ethnically representative the identified population of gifted students will be. Specifically,

we operationalized the general hypothesis into these testable hypotheses:

Hypothesis 1: Using building norms will yield an identified gifted population most representative of the racial/ethnic makeup of the larger K–12 population. Specifically, we hypothesize at least a 20% improvement in the representation index for African American and Latinx students when building norms are used versus national norms.

Hypothesis 2: Using a combination of national plus building norms with the *or* rule (students can qualify as gifted via either building or national norms) will result in a gifted-identified population more representative of the racial/ethnic makeup of the larger K–12 population than national norms only but not as representative as building norms alone.

Hypothesis 3: After controlling for school-level variables, European American and Asian American students will show a higher probability of being identified for gifted education services than African American or Latinx students when national norms are used.

Hypothesis 4: After controlling for school-level variables, African American and Latinx students will have a higher probability of being identified for gifted education services when building norms are used as compared with national, state, or district-level norms.

Methods

Data

Our data came from schools that administered the Northwest Evaluation Association (NWEA) Measures of Academic Progress (MAP) test. We obtained data from NWEA for all participating schools in 10 states—California, Colorado, Illinois, Kentucky, Minnesota, Michigan, Ohio, South Carolina, Washington, and Wisconsin—because these states had the 10 largest percentages of their overall student populations taking the MAP test. The data do not include any identifiable information. Multiple institutional review boards deemed this research not subject to review.

The 10 state data sets included all students in Grades 3 through 8 who took the MAP across a 10-year period: 2007–2008 to 2016–2017. However, because third grade is the most common point for students to be screened for gifted services (Siegle et al., 2018), we decided to analyze only the data from third-grade students who took reading and mathematics MAP assessments in the fall for each of these academic years, for a total of 10 cohorts of third-grade students. We decided to include all schools regardless of their type (e.g., public, private, charter) as long as there were more than five students (on average) tested in third grade at the school.

Measure

The MAP is a computer adaptive assessment of achievement in reading and mathematics. Because MAP is designed for students in Grades K–11 and is computer adaptive, there is little threat of ceiling effects for third-grade students (McCall, Kingsbury, & Olson, 2004), making it ideal for this study. Scores on the MAP demonstrated marginal reliability estimates ranging from .93 to .95 (NWEA, 2011). Concurrent validity estimates of the MAP with state achievement tests have hovered around $r = .80$ for objectively scored items (NWEA, 2011). The year-to-year scaling of the MAP and its measured constructs have been extremely stable (Kingsbury & Wise, 2011; Wang, McCall, Jiao, & Harris, 2012).

Student-level variables. Each student was identified in the data as belonging primarily to one of the following eight races or ethnicities: American Indian or Alaskan, Asian or Pacific Islander (Asian American), Black (African American), Hispanic (Latinx), multiethnic, Native Hawaiian or other Pacific Islander, not specified or other, or White (European American). NWEA-specific labels are those outside the parentheses. Because of the smaller sample sizes and these groups not being a primary focus in our hypotheses, we collapsed American Indian or Alaskan, multiethnic, Native Hawaiian or other Pacific Islander, and not specified or other into one category: other. European Americans served as the reference group. Table 1 lists the number of districts, schools, and students disaggregated by race or ethnicity category in the 10 states represented in the NWEA data that we used.

We created dummy codes to represent each of the other four race/ethnicity categories. The dependent variable was whether the student's observed MAP score in reading was greater than or equal to the cut scores for each of the four comparison norms (e.g., identified gifted under national norms = 1). Similarly, we created another set of variables to indicate whether the students were identified as gifted in mathematics.

Building-level variables. For each school, the data sets included school type (public or private) and setting (city, suburb, town, or rural). We used the type codes associated with each school's first observation in the data set. Among all the schools in the data set, approximately 7% changed setting status over time, but none changed school type. We also created a variable for the proportion of African American or Latinx students by summing the number of these students and dividing it by the total number of students in the school. Across the data set, 199 schools (2%) did not have an indication of public or private school status, and 221 (2.2%) were missing setting data. Thus, in the analyses that included these control variables, the sample size was reduced by approximately 2.2%.

TABLE 1
Number of Districts, Schools, and Students by Race/Ethnicity in the States Represented in the NWEA Data Sets

				African American		Asian American		European American		Latinx		Other	
State	Districts, *n*	Schools, *n*	Students, *n*	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Mathematics test													
CA	330	969	257,730	12,933	5	18,445	7	65,535	25	93,287	36	67,530	26
CO	247	874	236,855	7,483	3	6,059	3	122,674	52	55,666	24	44,973	19
IL	547	1,781	578,452	71,223	12	31,980	6	249,074	43	117,109	20	109,066	19
KY	175	594	231,333	15,354	7	2,643	1	150,515	65	10,112	4	52,709	23
MI	575	1,279	328,785	76,160	23	11,121	3	183,500	56	20,466	6	37,538	11
MN	564	1,086	433,898	30,344	7	23,217	5	267,855	62	25,039	6	87,443	20
OH	346	911	207,114	40,205	19	5,349	3	128,438	62	10,190	5	22,932	11
SC	131	712	506,669	167,606	33	7,262	1	256,694	51	37,372	7	37,735	7
WA	223	732	226,116	8,358	4	9,949	4	119,951	53	49,926	22	37,932	17
WI	460	1,075	298,099	21,408	7	10,854	4	190,272	64	24,131	8	51,434	17
Total	3,598	10,013	3,305,051	451,074	14	126,879	4	1,734,508	52	443,298	13	549,292	17
Reading test													
CA	258	662	162,219	7,220	4	13,507	8	45,230	28	59,105	36	37,157	23
CO	244	819	231,391	7,432	3	6,065	3	121,861	53	54,975	24	41,058	18
IL	547	1,779	571,720	69,991	12	31,986	6	248,518	43	115,654	20	105,571	18
KY	175	594	225,946	14,828	7	2,653	1	147,317	65	9,874	4	51,274	23
MI	567	1,270	323,757	74,217	23	11,017	3	182,080	56	20,171	6	36,272	11
MN	559	1,080	432,800	30,547	7	23,213	5	270,133	62	25,256	6	83,651	19
OH	363	968	205,184	39,612	19	5,180	3	127,460	62	10,046	5	22,886	11
SC	131	710	496,093	163,285	33	7,202	1	253,408	51	36,860	7	35,338	7
WA	221	729	220,540	8,251	4	10,030	5	116,844	53	48,950	22	36,465	17
WI	460	1,089	293,731	21,213	7	10,562	4	188,033	64	24,050	8	49,873	17
Total	3,525	9,700	3,163,381	436,596	1	121,415	4	1,700,884	54	404,941	13	499,545	16

Note. NWEA = Northwest Evaluation Association.

Analysis

The first two hypotheses approached disproportionality in terms of identification rate relative to the group's base population rate via representation indices (e.g., Peters et al., 2019; Yoon & Gentry, 2009). The last two hypotheses approached the issue of identification while accounting for the school context (e.g., private vs. public, setting) via the resulting odds ratios (ORs). Of note, OR and representation indices are comparable for low-incidence events (<10%) but not for larger incidences (Davies, Crombie, & Tavakoli, 1998), so qualitative interpretations of OR as if they were enrollment relative to base rate are likely to be fair in low-incidence events. Both the enrollment relative to base rate and OR perspectives were needed to understand the full picture of who is likely to be identified for gifted education services under what type of norm.

Hypotheses 1 and 2. To operationalize the application of national reading and mathematics norms, we determined the percentage of each race/ethnicity that would qualify for gifted services using the top 5% and top 15% as cut scores. We treated our 10-state sample as a population and calculated national norms and cut scores based on the full data set. We recalculated the national norm cut score for every year in our data for a total of 10 cut scores, for the top 5% and the top 15%, in mathematics and reading. First, we calculated the mean and standard deviation of the reading MAP scores in third grade for each fall (2007 through 2017). Second, we calculated the score associated with the top 5% ($z = 1.645$) and top 15% ($z = 1.0366$). A check of data skew revealed that the MAP scores were normally distributed for each year in the data set. We then created two variables to indicate whether each student would qualify for gifted services under either national norm cut score (i.e., whether the student's observed score exceeded the national cut score) in reading and mathematics. We then conducted an identical process using state, district, and building norms, answering the question, would a student's score have placed her or him in the top 15% of the state, district, or building?

In addition to using national, state, district, and school building norms, we evaluated the relative proportionality that resulted from using the *or* rule combination of national and building norms. Under these criteria, students are identified as gifted if they reached either cut score—the top 5% or 15% of the nation or within their building.

Next we reported representation indices, which are the percentage of the identified gifted population (under a given criterion or norm) that identifies with a specific race or ethnicity divided by the percentage of that group within the overall data set. We also calculated change in representation index for all racial and ethnic groups of students to further illustrate changes in enrollment relative to base rate in moving from national to local norms, state to local norms, and district to local norms.

Smallest effect of interest. Because no previous research has conducted such an analysis on a broad scale, we had little ground to make a specific prediction about the magnitude of the effect on identification rates of going from national to local norms. However, this does not prohibit us from establishing benchmarks for what size of an effect we believe would be associated with meaningful change.

Currently, African American and Latinx students are represented at rates of .57 and .70 in gifted programs nationally (Peters et al., 2019). In the study by Carman et al. (2018), which examined a single large district, African Americans were closer to 25% and Latinx closer to 50%. For the purposes of this article, we adopted a benchmark of a 20% increase in representation as our smallest effect of interest (Lakens, 2014)—in other words, an increase in representation due to changing from national to building norms ranging from 20% to the point of perfect proportionality (i.e., 1.0 would be considered meaningfully effective). If the more proximal norm group yielded an enrollment relative to a base rate increase ≥20% as compared with its referent, then we asserted that this constituted a "better" identification strategy, especially given its low cost. We acknowledge that this is an arbitrary determination and that others may support a different threshold.

Hypotheses 3 and 4. To address Hypotheses 3 and 4, we built multiple hierarchical generalized linear models using penalized quasi-likelihood estimation in HLM 7.03 (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2013) and report the unit-specific model results. To address differences in the probabilities of being identified as gifted on the basis of national, state, district, or building norms, we built four-level hierarchical generalized linear statistical models. These models allowed us to determine the probabilities of identification for students of different race/ethnicities at typical schools (e.g., we controlled for school type, setting, and percentage of minority students). We used the conservative recommendation for statistical significance proposed by Benjamin et al. (2018), which suggests that $p < .005$ results are statistically significant and $p < .05$ results are simply suggestive of a trend. For the effect size, we calculated ORs for each comparison of interest using the levels for small, medium, and large effects described by Chen, Cohen, and Chen (2010). We also report the predicted probabilities for each group under the various norming methods. See the Methodological Appendix (online) for model specifications.

Hypothesis 3. To test the hypothesis that European American and Asian American students will have a higher probability of being identified for gifted services according to national norms than will African American or Latinx students, we examined parameter estimates and their related predicted probabilities for all four models (reading and mathematics with 5% and 15% cutoffs; for details, see Technical Appendix online). We also calculated predicted probabilities for European American students (the reference group), African American students, Asian American students, and Latinx students under national norms, accounting for school-level variables per the previously described approach. We report ORs as the effect sizes for the comparisons of European American students with African American students and European American students with Latinx students.

Hypothesis 4. To test the hypothesis that African American and Latinx students will have a higher probability of being identified for gifted education when building norms are used as compared with national, state, or district norms, we reran the analyses from Hypothesis 3 but changed the reference norms and groups. The specific models are described in the Technical Appendix (online).

Preregistration and Registered Report

With the goals of increasing transparency and confidence in the findings and reducing the overall effort needed to complete the research, we submitted the proposed methods and literature review described here as a Registered Report to *AERA Open* prior to accessing the data. As part of the Registered Report, our proposed study (introduction, literature review, and methods of analysis) was peer reviewed, and reviewer feedback was incorporated into the plan of analysis. This final plan of analysis was then preregistered with the Open Science Framework (https://osf.io/kazy9/) to prevent us from engaging in any questionable research practices (John, Loewenstein, & Prelec, 2012), such as modifying analyses after viewing our data or changing our outcomes to obtain a desired result or to increase the paper's chance of publication. Registered Reports remove desirability bias from the author team as well as the reviewer and editorial teams. By shifting analysis and publication decisions prior to data review, all involved make decisions without being biased by the eventual results. By removing such biases, the

Registered Report process should increase confidence in the internal validity of the study. Moreover, it means that analyses do not have to be conducted multiple times, because reviewers recommend alternative strategies. By shifting the review process prior to data analysis, analyses are only run once. As we note later, any deviation from the preregistered plan of analysis is made clear and justified (e.g., the move to a three-level model instead of the preregistered four-level model in Hypotheses 3 and 4).

Results

Hypothesis 1

Table 2 presents the number of students from each student subgroup identified under each normative criterion level for the 5% and 15% cutoffs in reading and mathematics, as well as enrollment relative to base rate statistics. The results show consistent support for our general hypothesis that more proximal norm groups lead to more racially and ethnically representative populations of identified gifted students. Tables 3 and 4 present change in student representation under each norm cutoff level when compared with national norms for reading and mathematics, respectively. For example, in reading, under building norms for the 5% cut score, African Americans were 238% more represented under building norms than they were under national norms (.76 vs. .22). They remained disproportionately underrepresented under both, but the increase from .22 to .76 far exceeds our a priori criterion for a meaningful improvement. The numbers are relatively similar in mathematics (Table 4). Under the 5% criterion, transitioning from national to building norms led to a 300% increase for African American students (.15 vs. .60), while Latinx students saw a 170% increase in representation (.24 vs. .64).

The effect of more proximal normative criteria on proportionality was less pronounced at the 15% cut score than at the 5%. Although use of district and building norms resulted in substantial increases in proportionality for African American and Latinx students well beyond our 20% a priori criterion, the magnitude of the change in proportion was greater in all cases at the 5% criterion for reading and mathematics. Similarly, although broadening the cut score from 5% to 15% under national norms did increase the number of African American and Latinx students identified as gifted (see Table 2), the change was relatively small when compared with the use of more proximal norm criteria.

Figures 1 and 2 present the percentage identified in reading from each student subgroup under the 5% and 15% criteria, respectively, while Figure 3 shows the percentage changes in representation ratios by ethnicity and cutoff score. Figures 4–6 present the same information for mathematics. Moving from left to right within these figures shows the change in proportion of each group identified under the various normative criteria. Two themes are immediately clear across all these figures. First, national and state norms result in similar proportions of each subgroup being identified, suggesting that the use of state norms would have little to no effect on the size of each group identified. Second, with the exception of the national + building criterion (see Hypothesis 2), more proximal norms led almost every subgroup to become closer to equitable representation.

In summary, the results for reading and mathematics generally support Hypothesis 1: building norms produced an identified gifted population nearer to proportional representation than national norms for African American and Latinx students. All these values exceeded our a priori 20% criterion for meaningful change.

Exploratory results for Hypothesis 1. Although the representation of students from African American and Latinx subgroups increased under more proximal norms, the representation of European American and Asian American students decreased under more proximal norms. For example, under a 5% cutoff, Asian American representation decreased from 2.30 to 1.37 in reading. Similarly, European American student representation decreased from 1.29 to 1.12. Similar decreases were observed at the 15% cutoff as well as both cutoffs in mathematics. Regardless, in all cases, these groups were still disproportionately overrepresented in the identified gifted population.

Hypothesis 2

Whereas Hypothesis 1 primarily assessed the representation change in the shift from national to building norms, Hypothesis 2 assessed changes with a combination of national or building norms with the *or* rule (see Table 2). Results support Hypothesis 2 that using national + building norms would create a gifted-identified population more representative of the larger K–12 population than national norms only but not as representative as building norms. Under the national + building norm, more African American and Latinx students would be identified as gifted than under any other norm criterion. However, disproportionality within the identified population actually becomes *worse* than under building norms because proportionately more European American and Asian American students are identified under the national + building norm (see Figures 3 and 6 as well as the Figures Appendix online). As stated earlier, in almost every case, representation is closest to 1.0 under building norms. The exception is the "other" category at the 5% cut score, where national + building is better than building norms alone in achieving proportionality. The reading and mathematics results are similar, with national + building norms resulting in better proportionality for European American, Asian American, African American, and Latinx students than national norms alone (with building-level norms exceeding both).

TABLE 2

Descriptive Statistics and RIs for the Number and Percentage of Students Identified Under the Different Norms

	Reading						Mathematics					
	5% cutoff			15% cutoff			5% cutoff			15% cutoff		
Students: Norms	*n*	%	RI	*n*	%	RI	*n*	%	RI	*n*	%	RI
African American												
Total	436,596	13.80		436,596	13.80		451,074	13.65		451,074	13.65	
National	2,842	3.10	0.22	22,651	4.97	0.36	2,288	2.04	0.15	15,701	3.62	0.27
State	3,129	3.40	0.25	24,168	5.30	0.38	2,739	2.44	0.18	17,734	4.08	0.3
District	7,493	7.73	0.56	39,143	8.60	0.62	6,515	5.78	0.42	32,737	7.44	0.55
Building	10,138	10.50	0.76	47,849	10.56	0.77	9,097	8.15	0.6	41,841	9.45	0.69
National + building	11,013	8.03	0.58	52,349	8.81	0.64	9,888	6.08	0.45	45,546	7.74	0.57
Asian American												
Total	121,415	3.84		121,415	3.84		126,879	3.84		126,879	3.84	
National	8,082	8.82	2.3	30,494	6.69	1.74	14,641	13.03	3.39	36,633	8.44	2.2
State	7,715	8.37	2.18	29,623	6.49	1.69	14,363	12.77	3.33	36,215	8.33	2.17
District	5,937	6.12	1.59	24,335	5.35	1.39	10,876	9.65	2.51	29,913	6.80	1.77
Building	5,062	5.24	1.37	22,214	4.90	1.28	9,217	8.26	2.15	27,488	6.21	1.62
National + building	9,654	7.04	1.83	34,768	5.85	1.53	16,858	10.36	2.7	41,728	7.09	1.85
European American												
Total	1,700,884	53.77		1,700,884	53.77		1,734,508	52.48		1,734,508	52.48	
National	63,708	69.53	1.29	312,285	68.49	1.27	77,016	68.52	1.31	304,818	70.22	1.34
State	64,948	70.50	1.31	314,037	68.84	1.28	77,307	68.76	1.31	303,971	69.90	1.33
District	63,183	65.15	1.21	289,688	63.64	1.18	73,963	65.63	1.25	283,540	64.47	1.23
Building	58,200	60.28	1.12	272,174	60.08	1.12	69,169	61.95	1.18	270,123	61.00	1.16
National + building	85,489	62.36	1.16	368,202	62.00	1.15	103,132	63.40	1.21	372,355	63.28	1.21
Latinx												
Total	404,941	12.80		404,941	12.80		443,298	13.41		443,298	13.41	
National	3,094	3.38	0.26	22,456	4.92	0.38	3,555	3.16	0.24	20,824	4.80	0.36
State	3,041	3.30	0.26	22,003	4.82	0.38	3,738	3.32	0.25	22,118	5.09	0.38
District	6,168	6.36	0.5	34,625	7.61	0.59	7,145	6.34	0.47	36,861	8.38	0.62
Building	8,374	8.67	0.68	41,588	9.18	0.72	9,551	8.55	0.64	44,740	10.10	0.75
National + building	9,516	6.94	0.54	46,815	7.88	0.62	10,896	6.70	0.5	49,836	8.47	0.63
Other												
Total	499,545	15.79		499,545	15.79		549,292	16.62		549,292	16.62	
National	13,896	15.17	0.96	68,095	14.93	0.95	14,900	13.26	0.8	56,096	12.92	0.78
State	13,293	14.43	0.91	66,368	14.55	0.92	14,289	12.71	0.76	54,837	12.61	0.76
District	14,204	14.65	0.93	67,388	14.80	0.94	14,197	12.60	0.76	56,765	12.91	0.78
Building	14,782	15.31	0.97	69,181	15.27	0.97	14,618	13.09	0.79	58,634	13.24	0.8
National + building	21,423	15.63	0.99	91,737	15.45	0.98	21,883	13.45	0.81	78,994	13.42	0.81
All students												
Total	3,163,381			3,163,381			3,305,051			3,305,051		
National	91,622	2.90		455,981	14.41		112,401	3.40		434,072	13.13	
State	92,126	2.91		456,199	14.42		112,436	3.40		434,876	13.16	
District	96,985	3.07		455,179	14.39		112,696	3.41		439,817	13.31	
Building	96,556	3.05		453,006	14.32		111,651	3.38		442,827	13.40	
National + building	137,095	4.33		593,871	18.77		162,657	4.92		588,459	17.80	

Note. The *n* values represent the total number of students and the number of students identified as gifted. Percentages represent the percentage of that population who is of that race/ethnicity. RI = representation index.

TABLE 3

Change in Representation Rate in Reading by Norm and Race/Ethnicity With National Norms as the Reference Group

	5%					15%				
Norms	AA	Asian Am	Euro Am	Latinx	Other	AA	Asian Am	Euro Am	Latinx	Other
State	9	−5	1	−2	−5	0	−3	1	−2	−3
District	**149**	−31	−6	**88**	−3	**62**	−20	−7	**54**	−1
Building	**238**	−41	−13	**157**	1	**99**	−27	−12	**86**	2
National + building	**159**	−20	−10	**106**	3	**66**	−12	−9	**60**	3

Note. Values are presented as percentages. Bold indicates that the change in representation index exceeded our a priori criterion of ≥20% for a meaningful increase. AA = African American.

TABLE 4

Change in Representation Rate in Mathematics by Norm and Race/Ethnicity With National Norms as the Reference Group

	5%					15%				
Norms	AA	Asian Am	Euro Am	Latinx	Other	AA	Asian Am	Euro Am	Latinx	Other
State	20	−2	0	5	−4	−16	−1	0	6	−2
District	**184**	−26	−4	**100**	−5	**52**	−19	−8	**75**	0
Building	**300**	−37	−10	**170**	−1	**94**	−26	−13	**111**	2
National + building	**199**	−20	−7	**112**	1	**59**	−16	−10	**77**	4

Note. Values are presented as percentages. Bold indicates that the change in representation index exceeded our a priori criterion of ≥20% for a meaningful increase. Also, the change for AA under state norms was 20% after rounding; thus, the percentage is not bold. AA = African American.

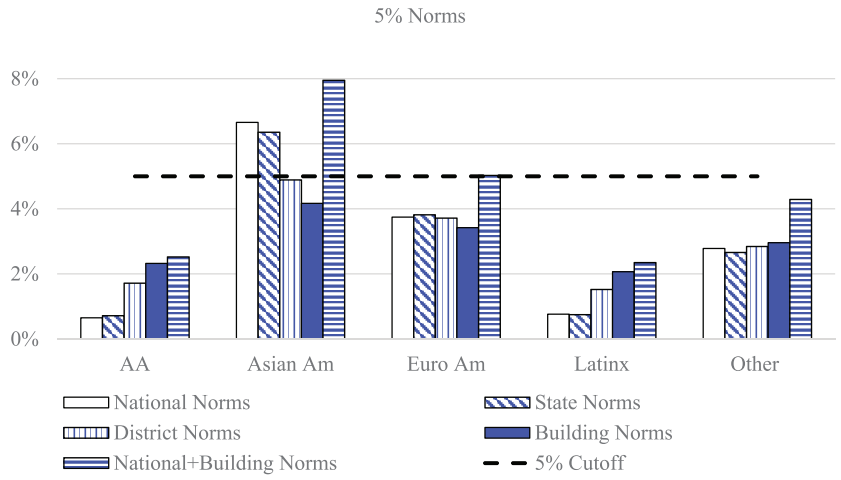

FIGURE 1. *Proportion of each race/ethnicity that was identified as gifted in reading by scope of norm at 5% cutoff. AA = African American.*

Exploratory results for Hypothesis 2. One result that was not part of Hypothesis 2 is that in most cases (e.g., Asian American students at either cut score), district norms turned out to be the second-most proportional norm (after building norms) for achieving proportionality and were similar to national + building norms. This can best be seen in Figure 2A in the Technical Appendix (online).

Hypotheses 3 and 4

For Hypotheses 3 and 4, we shifted from assessing the impact of different norms in the aggregate to the expected impact of using different norms at a typical school. These results can be interpreted as the expected changes in representation based on various norms at a school with an average

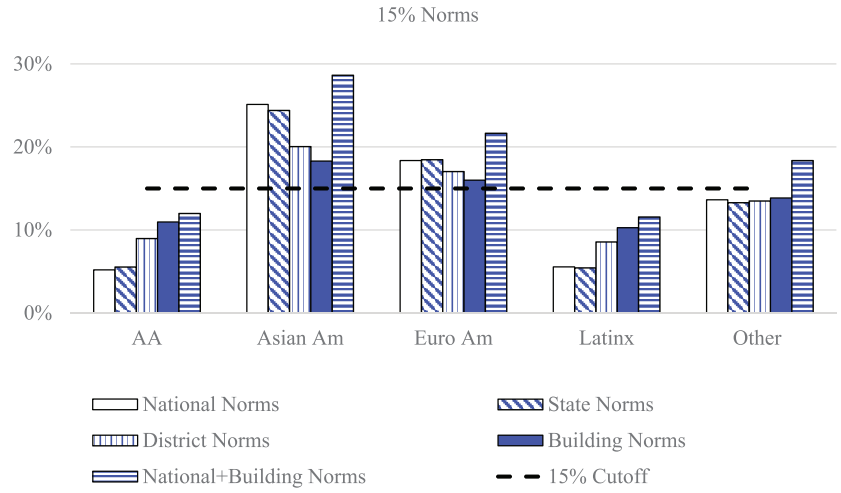

FIGURE 2. *Proportion of each race/ethnicity that was identified as gifted in reading by scope of norm at 15% cutoff. AA = African American.*

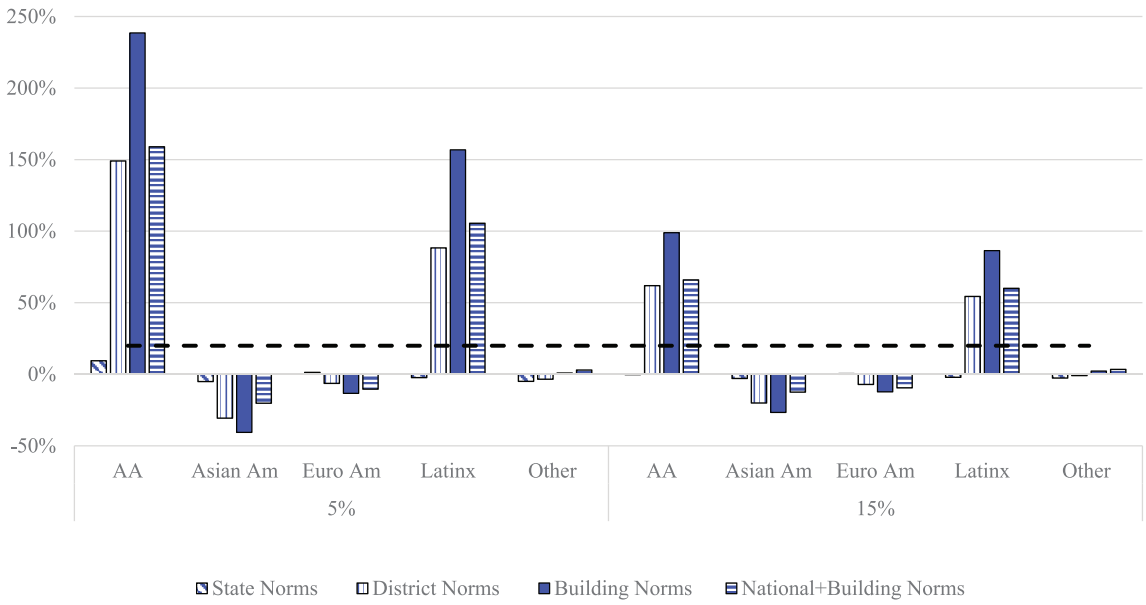

FIGURE 3. *Percentage change in representation indices in reading (national as reference norm) by ethnicity and cutoff. AA = African American.*

number of minority students (30% in our data) after adjustment of the parameter estimates for public/private school status and school locale (i.e., urban, suburban, rural, or town).

We originally planned to test Hypotheses 3 and 4 using four-level models: repeated measures (level 1) within student (level 2) within schools (level 3) within districts (level 4). However, the four-level models would not converge or were completed with errors. Upon inspection, of the 3,424 districts in the reading file and 3,469 districts in the mathematics file, just under 70% (n = 2,367 and = 2,406, respectively) of those districts only had one school, making the district and school levels functionally equivalent. Thus, we removed the fourth level (district) and proceeded with three-level models (repeated measures within student nested within schools). All models then completed without errors.

Hypothesis 3. With this hypothesis, we examined the OR of being identified on the basis of national norms by race/ethnic groups. The odds of being identified for gifted services per national norms for European Americans are provided in the first columns of Table 5, which served as the reference group for the other three groups. Across all four models, Asian American students had a higher probability than European

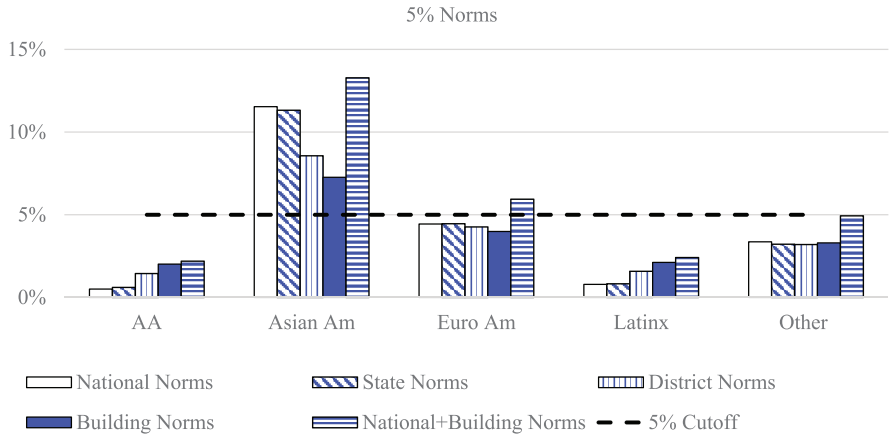

FIGURE 4. *Proportion of each race/ethnicity that was identified as gifted in mathematics by scope of norm at 5% cutoff. AA = African American.*

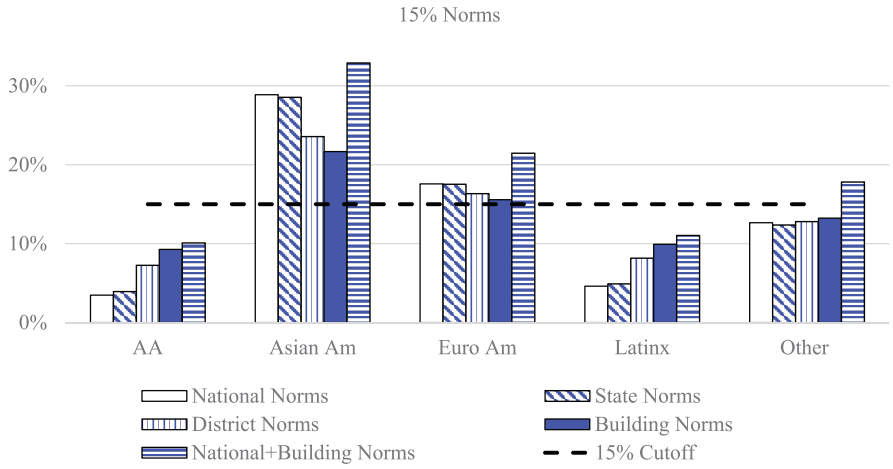

FIGURE 5. *Proportion of each race/ethnicity that was identified as gifted in mathematics by scope of norm at 15% cutoff. AA = African American.*

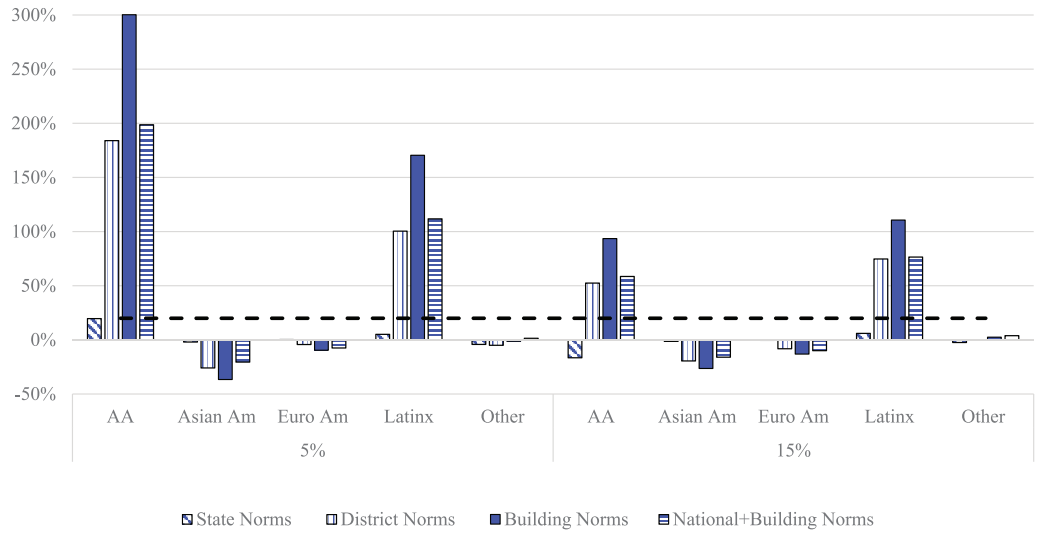

FIGURE 6. *Percentage change in representation indices in mathematics (national norm as reference) by ethnicity and cutoff. AA = African American.*

TABLE 5
Model Estimates and Odds Ratios by Student Subgroup: National Norms

	European American		Asian American		African American		Latinx	
Test: Cutoff	Reference coefficient	OR	ΔCoefficient	ΔOR	ΔCoefficient	ΔOR	ΔCoefficient	ΔOR
Reading								
5%	−4.16	0.02	0.32	1.38	−1.42	0.24[m]	−1.23	0.29[m]
15%	−2.26	0.10	0.28	1.33	−1.42	0.24[l]	−1.3	0.27[m]
Mathematics								
5%	−4.18	0.02	0.75	2.12[s]	−1.63	0.20[l]	−1.23	0.29[m]
15%	−2.44	0.09	0.64	1.90[s]	−1.63	0.20[l]	−1.28	0.28[m]

Note. Model parameter estimates and related ORs of European Americans (reference group) and the changes in the estimates and related changes in the ORs for Asian American, African American, and Latinx students identified under national norms controlling for school level variables. The superscript *s, m*, and *l* denote small, medium, and large Cohen's *d* effect sizes, respectively, per Chen, Cohen, and Chen (2010) and Yuanyuan Lu and Henian Chen (personal communication, November 26, 2018). All coefficients, $p < .001$. OR = odds ratio.

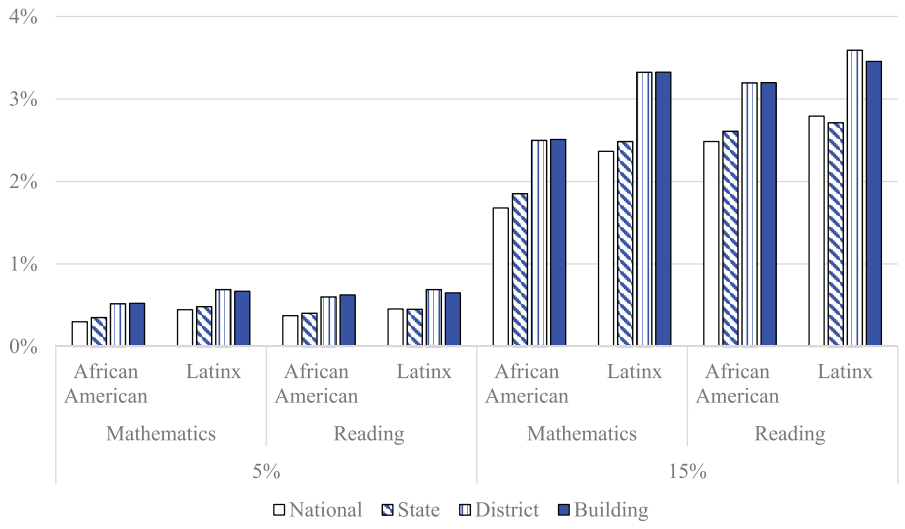

FIGURE 7. *Model-implied probabilities of being identified as gifted according to national, state, district, and building norms (at 5% and 15% cutoffs) for African American and Latinx students.*

American students of being identified as gifted with national norms (i.e., ORs all >1). However, African American and Latinx students showed a lower probability of being identified as gifted than European American and Asian American students for reading and mathematics and at the 5% and 15% cutoff thresholds (i.e., changes in the ORs all <1).

As reported in Table 5, the Cohen's *d* equivalent for the changes in the OR for African American and Latinx students relative to European American students was medium to large (Chen et al., 2010; Yuanyuan Lu and Henian Chen, personal communication, November 26, 2018). Of note, the Cohen's *d* effect size is based on the expected rate of incidence (5% and 15%), so the same OR under different cutoffs may not be considered the same size effect. All final model parameter estimates are reported in the Results Appendix (online).

Figure 7 illustrates the probabilities of being identified for gifted services for schools with an average percentage of African American and Latinx students (30%), controlling for public/private status and urbanity of setting. The patterns across reading and mathematics are the same: African American and Latinx students consistently have lower probabilities of being identified under national and state norms than under district or building norms. This is in line with national data on identification rates (Peters et al., 2018) as well as the results from Hypotheses 1 and 2.

Hypothesis 4. In Hypothesis 4, we evaluated the change in probability of being identified as gifted, similar to Hypothesis 3, but with the reference norm criteria changed to building and the reference subgroup changed to African American students. This was done to directly test the hypothesis that African American and Latinx students would have higher probabilities of identification under building norms. The same set of models was run with Latinx students as the

TABLE 6

Change in Model Coefficients and Odds Ratios of Identification for African American and Latinx Students Under Various Normative Criteria Compared to Building Norms

	Building		National change		State change		District change	
Test: Cutoff	Coefficient	OR	ΔCoefficient	ΔOR	ΔCoefficient	ΔOR	ΔCoefficient	ΔOR
African American								
Reading								
5%	−5.07***	0.006	−0.52***	0.59[s]	−0.44***	0.64[s]	−0.04	0.95
15%	−3.41***	0.030	−0.26***	0.76	−0.21***	0.81	−0.001	0.99
Mathematics								
5%	−5.25***	0.005	−0.56***	0.57[s]	−0.4***	0.67	−0.01	0.99
15%	−3.66***	0.025	−0.41***	0.66[s]	−0.31***	0.73	−0.004	1.00
Latinx								
Reading								
5%	−5.03***	0.006	−0.36***	0.7	−0.37***	0.69	0.06	1.07
15%	−3.33***	0.040	−0.22***	0.8	−0.25***	0.78	0.04	1.03
Mathematics								
5%	−5.00***	0.006	−0.41***	0.66	−0.33***	0.72	0.03	1.03
15%	−3.37***	0.030	−0.35***	0.7	−0.30***	0.74	−0.0004	1.00

Note. The model parameter estimates and related ORs comparing the probability of African American and Latinx students being identified under building norms as compared with national, state, and district norms controlling for school level variables. The superscript *s* denotes a small Cohen's *d* effect size per Chen, Cohen, and Chen (2010) and Yuanyuan Lu and Henian Chen (personal communication, November 26, 2018). OR = odds ratio.
*** $p < .001$.

reference group to assess their change in probability for being identified under each norm as compared with building.

The results reported in Table 6 in the Building column indicate the OR for being identified for gifted services on the basis of building norms at a school with an average percentage of African American and Latinx students after controlling for public/private school status and school locale. For reading and mathematics, the probability of being identified under national and state norms for African American and Latinx students was smaller than under building norms, as evidenced by the changes in the OR for national and state norms all being <1 (see Table 6 and Figure 7). However, although statistically significant, the effect sizes were negligible or small. Additionally, for African American and Latinx students, there was no difference in the OR for being identified according to building norms versus district norms after controlling for school-level variables. All the changes in the OR for using district relative to building norms were essentially nonexistent. Thus, Hypothesis 4 was not fully supported: there were no differences between building and district norms, but national norms and state norms identified fewer African American and Latinx students than building norms. All final model parameter estimates are reported in the Results Appendix (online).

In summary, Hypotheses 1–3 were fully supported by the data, and Hypothesis 4 was partially supported by the data. After controlling for school-level variables, national and state norms did identify fewer African American and Latinx students than building norms, but district norms did not identify fewer African American and Latinx students than building norms. The overall message is clear: the more proximal the norm, the more diverse the students who are identified for gifted services. However, the magnitude of the change will vary across schools.

Discussion

In Hypothesis 1, we predicted at least a 20% improvement in the representation index for African American and Latinx students being identified as gifted according to building norms versus national norms. Our findings supported this hypothesis. This is in line with prior research (Lohman, 2005; Peters & Engerrand, 2016; Plucker & Peters, 2016) suggesting local norms as a way to diversify gifted and talented populations. More broadly, we found that shifting identification criteria from national norms to any more proximal norming group (with the exception of state norms) appeared to lead to a meaningful increase (i.e., >20% gain) in gifted representation rates for African American and Latinx students across mathematics and reading.

A consequential implication (not part of our a priori hypotheses or predictions) of any shift to nonnational normative criteria would be a nontrivial decrease in representation of Asian American students in gifted programs. For example, by using a 5% cutoff and building norms, Asian American student representation in gifted programs would

decline 41% in reading and 37% in mathematics. However, as shown in Table 2, these student groups would still be disproportionately overrepresented in gifted programs relative to their proportions of the student population (1.37 and 2.15 times as likely to be identified as gifted under building norms in reading and mathematics, respectively). European American students appear to show similar declines, but as shown in Table 2, European American students would remain disproportionately overrepresented in gifted programs relative to their proportion among the overall student population. This decline would fall below our a priori 20% threshold for meaningful change.

In support of Hypothesis 2, we found that using national + building norms yielded proportionality closer to parity (i.e., 1.0) for European American, Asian American, African American, and Latinx students than national norms did, and this held for reading and mathematics. Additionally, building-level norms exceeded national norms alone and national + building norms in terms of proportionality. The national + building option can be seen as a compromise between the extremes of national and building norms. Under national + building norms, fewer Asian American or European American students would be seen as "losing" eligibility because they would remain identified under the national norm pathway, while additional African American and Latinx students would be identified. This compromise comes at the cost of identifying the largest number of students. Table 2 shows that under the 5% cutoff for reading, 91,622 and 96,556 students were identified via the national and building norm criteria, respectively, whereas 137,095 students were identified under the national + building criterion—a 40% increase over building norms. Although the expense of using different norm criteria itself would not be high, we imagine that a ≥40% increase in the population eligible to receive gifted services would be significant for any school district in terms of additional resources needing to be allocated to this area. Another alternative would be to phase in the nonnational normative criteria over time—for example, one grade level at a time. This way, students identified with national norms would age out of the system, with incoming students being identified with more-local normative criteria.

School-level factors influence the degree to which a move from national to building norms increases diversity within gifted education. A move to building norms in schools with a typical proportion of minority students (about 30%) does not have as large an effect as it would in a building with a larger proportion of minority students. This points to an important implication, which is that building norms will not increase the diversity within every building's gifted population. Rather, building norms have the greatest effect (a) on the aggregate population diversity and (b) in schools with larger-than-average populations of minority students. Thus, although our data suggest that implementation of building norms would yield a massive increase in the number of African American and Latinx students in advanced learning programs across the United States, policy makers should not presume that building norms will have such effects in every school. Implementing local norms is not a panacea for addressing all systemic causes of underrepresentation in gifted education.

Two important caveats to our analyses are (a) the need for universal consideration and (b) a caution to educators that use of local norms need not automatically result in loss of services for some students previously identified with the use of less proximal norms. Regarding universal consideration, districts will find it impossible to take the top 5% or 15% of any group if <100% of the group is tested. This is an important caveat simply because universal consideration of an entire grade for gifted programming eligibility is still relatively rare in U.S. schools, due in part to little state financial support for such systems (Plucker, Glynn, Healey, & Dettmer, 2018). This is not a limitation of the current study's analyses but instead represents a challenge to their broader implementation.

Regarding loss of services that could be seen in a transition from one norm criterion to another (e.g., national to building), the few districts in the country that are beginning to share experiences with local norms implementation generally report resistance from parents whose children (presumably European American, Asian American, and/or upper income) lose services as a result. District leadership often appears surprised by this political blowback, but it is to be expected whenever students lose services. An approach that expanded the number of students receiving advanced learning services (i.e., through a combination of national/state/district and local norms) would require more resources but likely result in less controversy. This is an important consideration before a district moves forward with any new normative criteria.

Conclusion

Disproportionality rates along racial/ethnic lines have been reported in numerous educational areas, including gifted identification. Such disproportionality is particularly problematic if/when the students who remain unidentified would benefit from placement into gifted education programming. The current results, in tandem with previous findings, suggest that transitioning from national/state reference norms to local building norms for gifted identification would substantially reduce group differences in rates of gifted identification. Practically, such a shift would also help schools identify a more consistent number of students. This approach also would constitute a shift toward difference from within-building peers as the justification for gifted services. The metric for success of the gifted identification process would be increased learning outcomes that

arise from placing students into environments that can better meet their specific learning needs. Such a change in identification policy would likely require schools to provide additional teacher training and possibly reallocate space and staff, but any such changes to serve a larger and more representative gifted student population should be seen as necessary expenditures in the service of improved educational equity.

The results in this article can be used by school leaders when contemplating the adoption of different norming strategies in their gifted education identification systems. First, in districts with little residential segregation (de facto or otherwise) and similar demographics across their schools, using any level of norms will likely produce a similar pool of identified students. Second, in districts with considerable residential segregation and dissimilar school demographics, using school-based norms will identify more African American and Latinx students (and, although not directly addressed in this study, almost certainly more students from low-income backgrounds). Third, if a district does not expand programming and holds the number of identified students constant, moving from national to local norms will result in some previously identified students losing services, and a negative parent and student reaction should be expected. An alternative is to expand the number of students receiving services by using both school-based and national/state/district norms, which will not improve disproportionality as dramatically as local norms alone but should sharply increase the number of previously underserved African American and Latinx students eligible for gifted services.

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Notes

1. Although race is not a construct with clearly defined boundaries, we believe that race and the underlying power dynamics of racial categories matter. We purposefully vary racial terms (e.g., African American and European American, rather than African American/Black and White). We recognize that umbrella terms such as Native American incorporate numerous subgroups, as do the descriptors Asian, Hispanic, and Latinx. We consciously have changed or rearranged some terms used in national databases, as these may demonstrate a bias hierarchy. We also follow American Psychological Association guidelines and arrange lists of racial/ethnic categories or results either alphabetically or numerically.

2. All data are from the NAEP Data Explorer, https://nces.ed.gov/nationsreportcard/naepdata/dataset.aspx. Data run May 22, 2018.

ORCID iDs

S. J. Peters https://orcid.org/0000-0003-2459-3384

K. Rambo-Hernandez https://orcid.org/0000-0001-8107-2898

M. C. Makel https://orcid.org/0000-0002-3837-0088

M. S. Matthews https://orcid.org/0000-0003-1695-2498

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Authors

SCOTT J. PETERS is an associate professor of educational foundations and the Richard and Veronica Telfer Endowed Faculty Fellow of Education at the University of Wisconsin–Whitewater. His research work focuses on educational assessment, gifted and talented student identification, disproportionality, and educational policy.

KAREN RAMBO-HERNANDEZ is an associate professor of educational psychology in the Department of Learning Sciences and Human Development at West Virginia University. Her research interests include novel applications of multilevel modeling and growth modeling, the assessment of educational interventions to improve STEM education, and access for all students—particularly high-achieving and underrepresented students—to high-quality education.

MATTHEW C. MAKEL is the director of research and evaluation for Duke University's Talent Identification Program. His research focuses on academic talent development and research methods.

MICHAEL S. MATTHEWS is professor and director of the academically and intellectually gifted graduate programs at the University of North Carolina at Charlotte and coeditor of *Gifted Child Quarterly*. His research interests focus on assessment and identification of gifted children, education policy, parenting (including homeschooling) of gifted learners, and gifted and academically advanced learners from diverse backgrounds, particularly English learners.

JONATHAN A. PLUCKER is the Julian C. Stanley Professor of Talent Development at Johns Hopkins University. His work focuses on creativity and intelligence, education policy, and talent development.

The Why, **What**, & *How* of Creating Local Norms

Created by Jason S. McIntosh, Ph.D.

The Current System

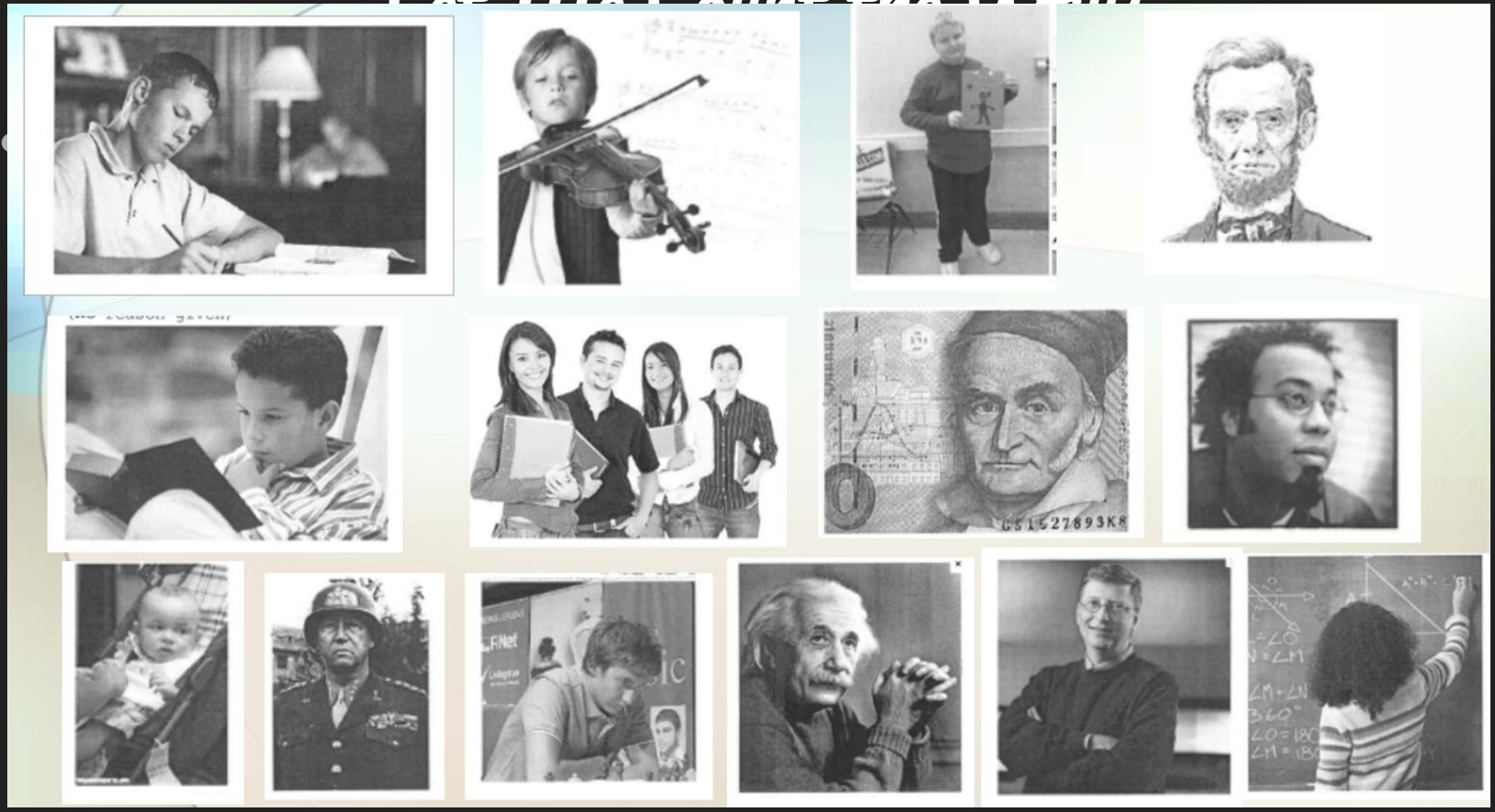
- District chooses an assessment from the *State Board Approved List* of nationally normed tests→ LINK
- District adopts cut scores for identifying giftedness (*According to ARS 15-779, the cut score cannot be higher than 97th percentile, but it can be lower*.)
- Students are referred by a teacher or parent and then assessed
- Any student meeting the cut score in the verbal, quantitative, OR nonverbal area is identified as gifted and must (BY LAW) be served
- Outside of district testing must be accepted
- Students do NOT need to be retested (Once identified, always identified)

What is wrong with this process?

- Cutting-edge research in the field of gifted education has shown that using national norms is not always the fairest, most equitable way to identify ability.

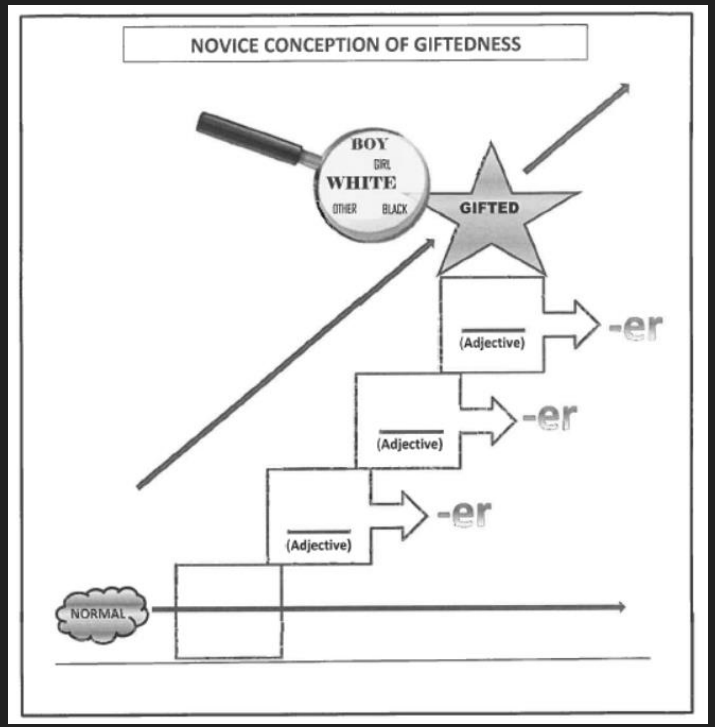
WHY?

Let Me Count the Ways



Let Me Count the Ways

- Graphic Representation of the Data



Let Me Count the Ways

- What do you notice?

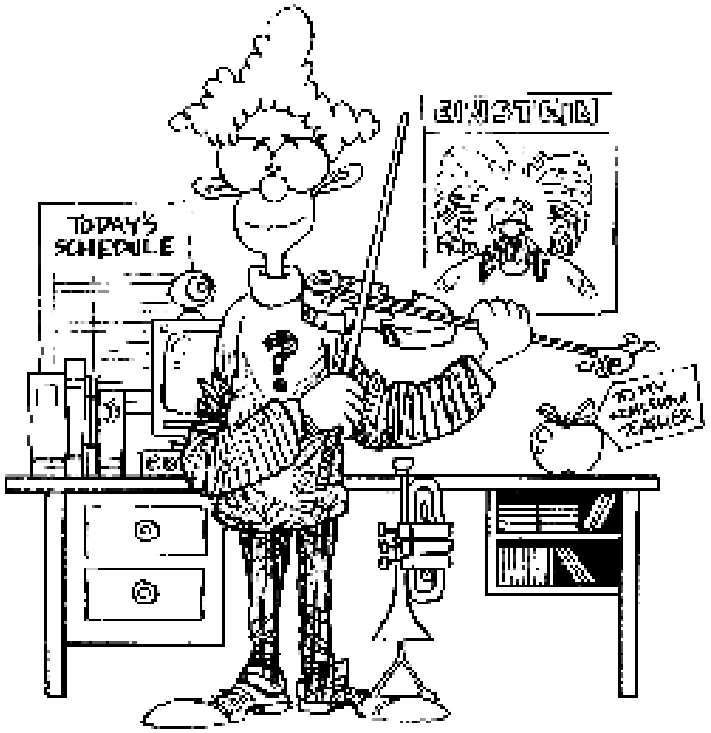
Table 1. *District Demographics Compared to Gifted Program Demographics*

Demographic	Percent of District	Percent of Gifted Program
Asian	2.6	5.9
Black	9.6	2.8
Hispanic	53.2	34.1
Native American	3.7	2.6
Native Hawaiian	0.26	.004
White	27	50.3
Multiple	3.7	3.9
ELL	14	0.7
SPED	15.5	2.3
Males	52	55
Females	48	45

- Not eve into play

STEREOTYPES: Is this the 'typical' gifted student?

Cartoon by Polly 2001



Myths	**Reality**
Gifted students are smart in every subject.	***Gifted students are diverse in their abilities.***
Gifted students will learn on their own.	***Gifted students need nurturing and support at their appropriate level.***
Gifted students are arrogant, elitist snobs.	***Gifted students have been taught by adults to be arrogant and elitist.***
Gifted students need to be with only other gifted students.	***Gifted students need a variety of groupings.***
Gifted students need gifted teachers.	***Teachers need thorough knowledge & understanding of gifted students.***
Gifted students should do more work.	***Work for gifted students should be commensurate with student ability.***
Gifted students are well behaved.	***Gifted students demonstrate a typical wide range of behaviors.***
Gifted students are fluent in English.	***Gifted students represent the diversity of society.***

Let Me Count the Ways

- National norms do NOT represent the demographics in our local school districts

Table 25 below presents the overall weighted sample during standardization.

Table 25: Overall (Weighted Sample)

Identification	Percentage
IEP/504 Program	6.6*
Gifted/Talented Program	2.4*
ELL/LEP	2.8
F/RL	19.0
Migrant	0.1
Title I	**Percentage**
Title I Reading/Language Arts Only	1.9
Title I Math Only	1.1
Title I Reading/Language and Math	11.9
No Title I indicated	85.1
Home Language	**Percentage**
English	82.2
Spanish	9.9
Other	2.6
Marked More Than One Option	0.5
No Home Language Indicated	4.8

Table 26: Racial-Ethnic Representation Grades K–12, (Weighted Sample)
Fall 2010 National Standardization Study

Ethnicity	Population Percent*	Weighted Sample Percent**
Hispanic or Latino	21.7	20.1
Not Hispanic or Latino	78.3	79.9
Race		
American Indian or Alaska Native	0.9	1.4
Asian	3.7	2.9
Black or African American	15.5	12.4
Native Hawaiian or Other Pacific Islander	0.2	0.8
White	55.5	57.6
Two or More Races	2.6	4.8

Let Me Count the Ways

Table 29: Standard Error of Measurement for Standard Age Scores (SAS) by Grade
Fall 2010 National Standardization Study

Grade	Level	Verbal	Quantitative	Nonverbal	VQ Composite	VN Composite	QN Composite	VQN Composite	Alternative Verbal	Screening Form Total	Alternative Screening Form Total
K	5/6	7.1	6.7	6.2	5.4	5.6	5.4	4.8	8.1	6.3	—
1	7	5.9	5.8	5.7	4.8	4.7	4.8	4.1	6.9	5.4	—
2	8	5.4	4.3	4.7	3.8	3.9	3.5	3.2	6.0	4.8	—
3	9	4.3	4.1	5.1	3.6	3.6	3.5	3.0	—	4.5	5.6
4	10	5.0	4.2	5.1	3.6	4.0	3.5	3.2	—	4.6	5.2
5	11	5.1	4.3	5.2	3.7	4.1	3.7	3.3	—	4.7	5.6
6	12	4.8	4.0	5.2	3.6	4.0	3.5	3.1	—	4.4	5.2
7	13/14	4.6	4.1	5.4	3.5	4.0	3.6	3.1	—	4.7	5.3
8	13/14	4.7	4.3	5.6	3.7	4.2	3.8	3.3	—	4.9	5.5
9	15/16	4.8	4.3	5.7	3.9	4.1	4.0	3.4	—	5.3	6.0
10	15/16	4.9	4.5	5.8	3.9	4.3	4.0	3.4	—	5.3	6.0
11	17/18	4.7	4.5	5.8	3.8	4.1	4.0	3.3	—	4.9	5.8
12	17/18	4.8	4.4	5.8	3.7	4.0	4.0	3.4	—	4.8	5.7

Note: SEMs are based on the fall standardization data; however, the values can be used as estimates for the midyear and spring test administrations.

Let Me Count the Ways

- The effects of poverty on educational outcomes

(A student from a low-income family that scores at the 86th percentile on the CogAT has the same intellectual ability as a student from a middle to upper income family who scores at the 97th percentile.)

WHY?

FEWER EXPERIENCES EARLIER IN LIFE!

Let Me Count the Ways

- Reliance on single measures of giftedness

Because of these factors....

- “African American, Hispanic, and Native American students have traditionally been underrepresented by 40% for decades”.

(Ford, 201

NAGC Recommendations

1. Implement universal screeners (e.g., the HOPE Scale)
2. Use multiple measures of intelligence (e.g. student work samples, teacher rating scales, observations notes, achievement data, universal screeners)
3. Educate teachers on biases while nominating
4. Send information about identification processes home in multiple languages
5. Hold identification meetings with a team of educators
6. Develop local norms when appropriate

It is important to remember that “decisions about giftedness in children are never more than predictions” (Passow & Frasier, 1996, p. 200), and test scores should never be allowed to negate other valid evidence about the potential of a student (Ford, 2008).

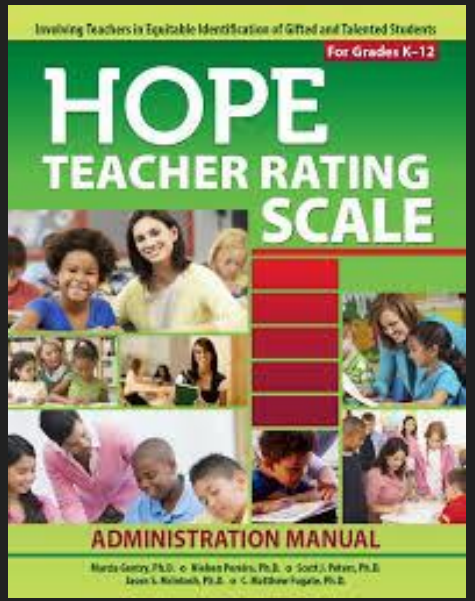
What are local norms?

In short, local norms allow you to compare YOUR students with YOUR students?

According to the Department of Education's Office of Civil Rights, 6% to 10% of any population is gifted.

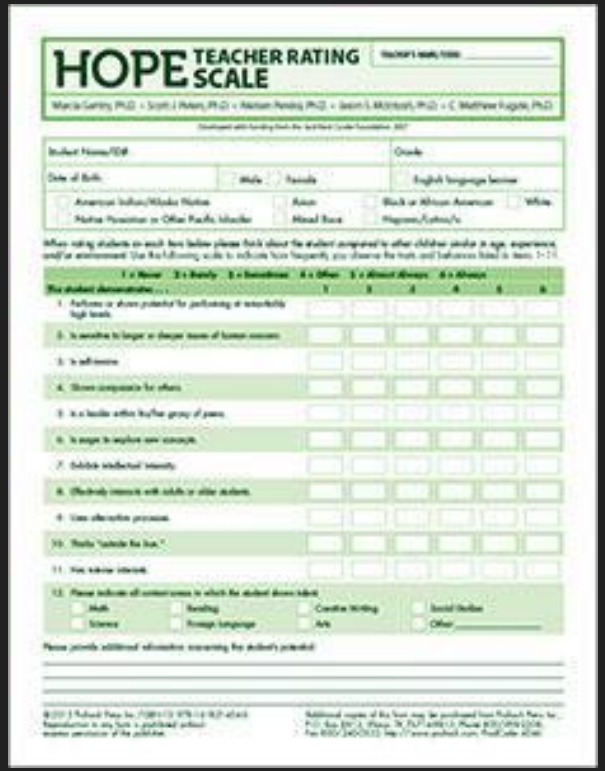
1 Universal Screener (e.g., HOPE Scale)

- The HOPE Scale is an existing 11-item teacher-rating instrument designed to help teachers identify academic and social components of giftedness in students (Gentry, Pereira, Peters, McIntosh, & Fugate, 2015).



The HOPE Scale

- HOPE in the title stands for:
  - **H** aving
  - **O** pportunities
  - **P** romotes
  - **E** xcellence



HOPE TEACHER RATING SCALE

Research

- To date, the HOPE Scale has undergone several validity studies with elementary and high school teachers and their students in which **invariance** existed between **low-income and non-low income** groups as well as among **cultural groups** (Peters & Gentry, 2010, 2013) and (McIntosh, 2014).

Native American Sample

Table 1

Native American Sample (n=1,095)

Community	State	Tribe	Teachers	Students
Ganado	Arizona	Dine	31	653
Lukachukai	Arizona	Dine	6	100
Red Lake	Minnesota	Ojibwe	23	267
Mille Lacs	Minnesota	Ojibwe	6	56
McLaughlin	South Dakota	Lakota	3	19

Dine Reservation

Rating the Students

#1: Performs or shows potential for performing at remarkably high levels.

re·mark·a·ble
/rəˈmärkəb(ə)l/

adjective

worthy of attention; striking.
"a remarkable coincidence"

1= Never **2**= Rarely **3**= Sometimes **4**= Often **5**= Almost Always **6**= Always

#2: Is sensitive to larger or deeper issues of human concern.

sen·si·tive
/ˈsensədiv/

adjective
adjective: **sensitive**

1. quick to detect or respond to slight changes, signals, or influences.

Examples:
-The meaning of life
-The famine in Africa
-Politics in Washington
-Global warming

1= Never **2**= Rarely **3**= Sometimes **4**= Often **5**= Almost Always **6**= Always

#3: Is self-aware.

self-a·ware

/ˌselfəˈwer/

adjective
adjective: **self-aware**

having conscious knowledge of one's own character and feelings.
"we're self-aware enough to know we're making mistakes"

Examples:
-Knows how they learn best
-Is conscious of how others see them
-Tuned in to their own feelings and thoughts

1= Never **2**= Rarely **3**= Sometimes **4**= Often **5**= Almost Always **6**= Always

#4: Shows compassion for others.

com·pas·sion

/kəmˈpaSHən/

noun

sympathetic pity and concern for the sufferings or misfortunes of others.

Examples:

-The dead bug on the windshield
-The homeless person on the exit ramp
-Their classmate who forgot their lunch today

1= Never **2**= Rarely **3**= Sometimes **4**= Often **5**= Almost Always **6**= Always

#5: Is a leader within his/her group of peers.

lead·er

/ˈlēdər/

noun

noun: **leader**; plural noun: **leaders**

1. the person who leads or commands a group, organization, or country.

Examples:

-Others go to them for help or advice

-First to volunteer an answer or to participate

-Is responsible, trustworthy, doesn't give up easily

1= Never **2**= Rarely **3**= Sometimes **4**= Often **5**= Almost Always **6**= Always

#6: Is eager to explore new concepts.

ea·ger

/ˈēgər/

adjective

adjective: **eager**

(of a person) wanting to do or have something very much.

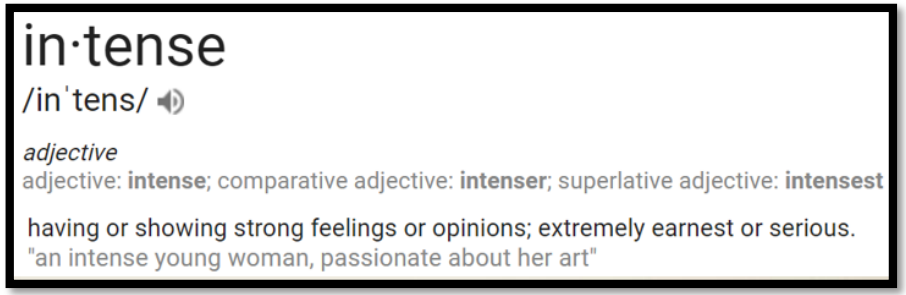
Examples:

-Curious to know
-Gets excited about learning a new fact
-Reads about or explores things at home or in their free time

1= Never **2**= Rarely **3**= Sometimes **4**= Often **5**= Almost Always **6**= Always

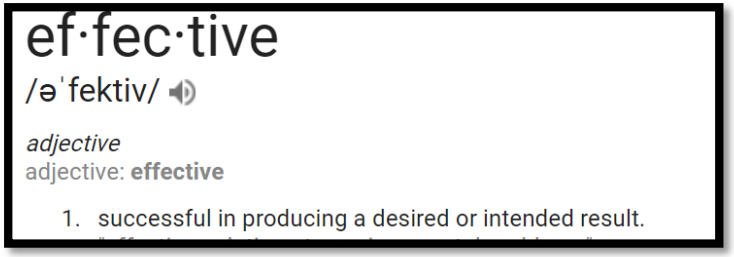
#7: Exhibits intellectual intensity.

Examples:
-Can concentrate or focus for long periods of time
-Independent thinker
-Strong memory



1= Never **2**= Rarely **3**= Sometimes **4**= Often **5**= Almost Always **6**= Always

#8: Effectively interacts with adults or older students.



Examples:

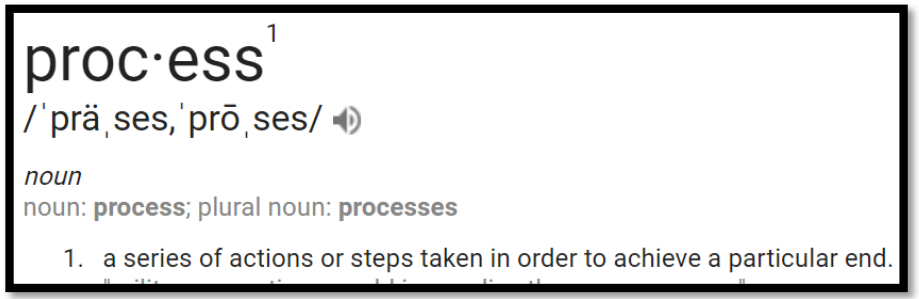
-Sounds older than they are
-Prefers older students or adults to their peers
-Communicates well and uses big words

1= Never **2**= Rarely **3**= Sometimes **4**= Often **5**= Almost Always **6**= Always

#9: Uses alternative processes.

Examples:

-Finds a solution no one else thought of
-Sees other possibilities
-Enjoys finding new ways to do things



proc·ess[1]

/ˈprä ˌses, ˈprō ˌses/

noun

noun: **process**; plural noun: **processes**

1. a series of actions or steps taken in order to achieve a particular end.

1= Never **2**= Rarely **3**= Sometimes **4**= Often **5**= Almost Always **6**= Always

#10: Thinks outside the box.

Examples:

-Thinks differently or unconventionally

-Has a unique perspective and many ideas

-Creativity is a strength

1= Never **2**= Rarely **3**= Sometimes **4**= Often **5**= Almost Always **6**= Always

#11: Has intense interests.

Examples:

-Gets fixated on a topic for a long period of time
-Has unusual hobbies
-Wants to know everything there is to know about something
-Looses track of time while doing something

in·tense

/inˈtens/

adjective

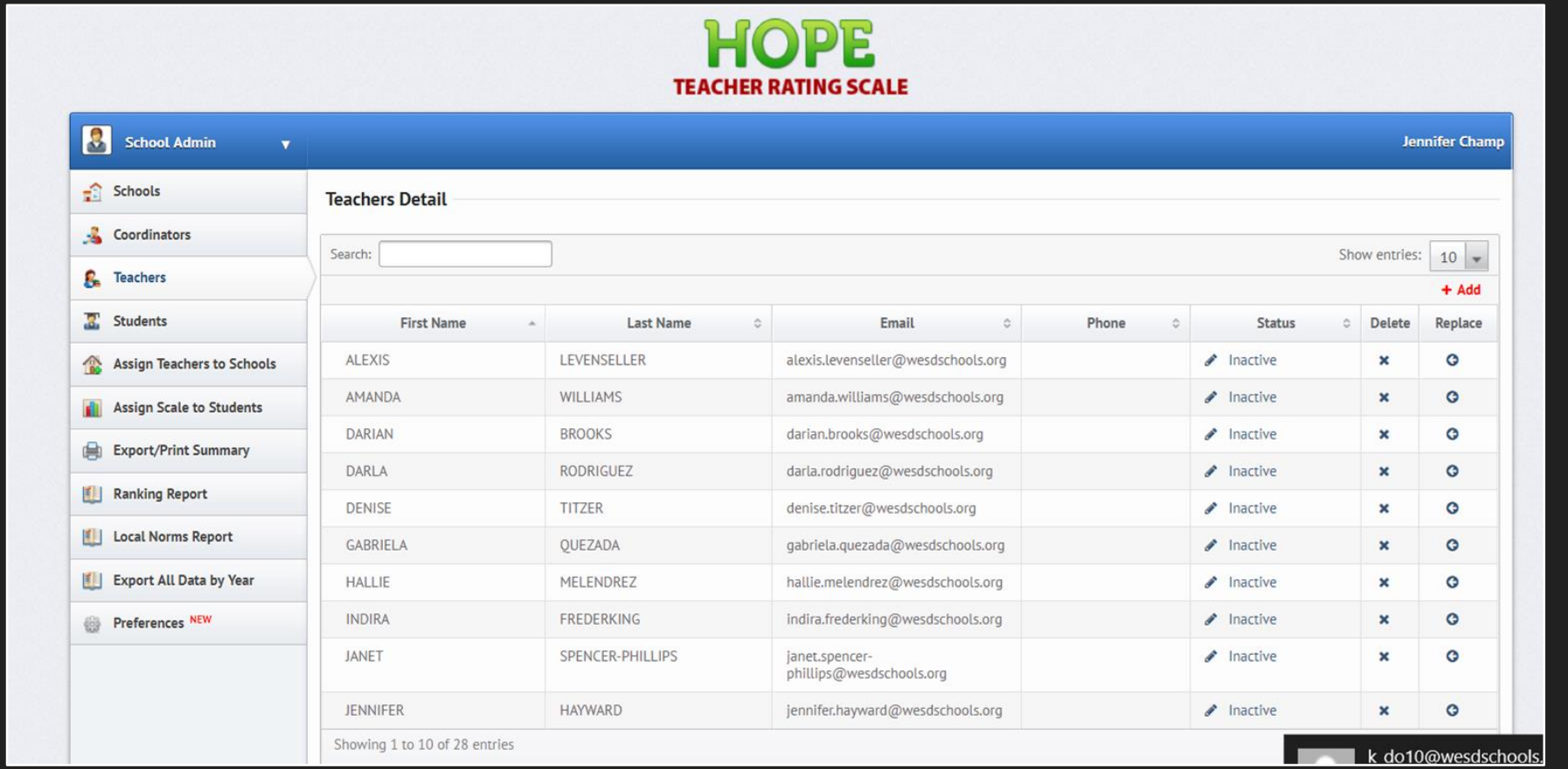
adjective: **intense**; comparative adjective: **intenser**; superlative adjective: **intensest**

having or showing strong feelings or opinions; extremely earnest or serious.
"an intense young woman, passionate about her art"

1= Never **2**= Rarely **3**= Sometimes **4**= Often **5**= Almost Always **6**= Always

#12: Please indicate all content areas in which the student shows talent:

- Math
- Science
- Reading
- Foreign Language
- Creative Writing
- Arts
- Social Studies
- Other


HOPE
TEACHER RATING SCALE
School Admin
Jennifer Champ
Schools
Coordinators
Teachers
Students
Assign Teachers to Schools
Assign Scale to Students
Export/Print Summary
Ranking Report
Local Norms Report
Export All Data by Year
Preferences NEW
Teachers Detail
Search:
Show entries: 10
+ Add
First Name
Last Name
Email
Phone
Status
Delete
Replace
ALEXIS LEVENSELLER alexis.levenseller@wesdschools.org Inactive
AMANDA WILLIAMS amanda.williams@wesdschools.org Inactive
DARIAN BROOKS darian.brooks@wesdschools.org Inactive
DARLA RODRIGUEZ darla.rodriguez@wesdschools.org Inactive
DENISE TITZER denise.titzer@wesdschools.org Inactive
GABRIELA QUEZADA gabriela.quezada@wesdschools.org Inactive
HALLIE MELENDREZ hallie.melendrez@wesdschools.org Inactive
INDIRA FREDERKING indira.frederking@wesdschools.org Inactive
JANET SPENCER-PHILLIPS janet.spencer-phillips@wesdschools.org Inactive
JENNIFER HAYWARD jennifer.hayward@wesdschools.org Inactive
Showing 1 to 10 of 28 entries
k_do10@wesdschools.

- Generate a Ranking Report
- Identify top 10%
- Collect Multiple Pieces of Data

Teacher Rating Scale
(HOPE Scale)

Grade: 3
Age: All
School: All
Scale: HOPE TEACHER RATING SCALE

ACADEMIC SUBSCALE

Rank	First Name	Last Name	Student #	Grade	Age	School	Raw Score
1	Jencarlos			3	9	Shaw Butte	36
2	Kadence			3	9	Desert View	36
3	Rosa			3	9	Shaw Butte	36
4	Camila			3	9	Shaw Butte	36
5	Gamaliel			3	9	Shaw Butte	36
6	Jackson			3	8	Shaw Butte	36
7	Brendon			3	9	Shaw Butte	35
8	Jessica			3	9	Shaw Butte	34
9	Destiny			3	10	Shaw Butte	36
10	Cruz			3	9	Shaw Butte	36
11	Friday			3	9	Washington Element	34
12	Jayden			3	9	Shaw Butte	36
13	Christopher			3	9	Shaw Butte	36
14	Jordan			3	9	Shaw Butte	32
15	Rahnyiss			3	9	Washington Element	31
16	Tatiana			3	9	Shaw Butte	28
17	Evelyn			3	8	Alta Vista	32

Last Name	First Name	Grade	Prior Gifted Testing			AZ Merit		District Interim 3		Post Test	
			Verbal	Quant	NonVerbal	ELA	Math	ELA	Math	ELA	Math
Sample #1	Sam	5	45	90	62	Proficient	Highly Proficient	70	86	64	79

- New ‘Gifted Education’ bill passed in AZ that has a provision to pay for universal testing at second grade!

2

Multiple Measures

(Georgia's Approach)

Category	Option A	Option B
	Student must have a qualifying score in the mental ability AND achievement categories.	**Student must qualify in <u>three of the four</u> categories.**
Mental Ability	➢ Grades K-2 99th% percentile composite score on a nationally age normed mental ability test ➢ Grades 3-12 ≥96th percentile composite score on a nationally age normed mental ability test	➢ Grades K- 12 ≥ 96th percentile composite on a nationally age normed mental ability tests OR 96th percentile on a component score on a nationally age normed mental ability tests (see pg. 27 of manual for add'l information)
Achievement	➢ Grades K-12 ≥ 90th percentile Total Reading, Total Math, or Complete Battery on a nationally normed achievement test	➢ Grades K-12 ≥ 90th percentile Total Reading, Total Math, or Complete Battery on a nationally normed achievement test ➢ Grades K – 12 Superior product/performance with a score ≥ 90 on a scale of 1-100, as evaluated by a panel of three or more qualified evaluators
Creativity	➢ Evaluation data required	➢ Grades K-12 ≥ 90th percentile on composite score on a nationally normed creativity test ➢ Grades K-12 Rating scales used to qualify student creativity must equate to the 90th percentile ➢ Grades K-12 Superior product/performance with a score ≥ 90 on a scale of 1-100, as evaluated by a panel of three or more qualified evaluators
Motivation	➢ Evaluation data required	➢ Grades 6-12 Two-year average of a 3.5 GPA on a 4.0 scale in regular core subject of mathematics, English/language arts, social studies, science, and full year world languages (see page 30 of manual for add'l info.) ➢ Grades K-12 Rating scales used to qualify student motivation must equate to the 90th percentile ➢ Grades K – 12 Superior product/performance with a score ≥ 90 on a scale of 1-100, as evaluated by a panel of three or more qualified evaluators

Identification of gifted students shall be nondiscriminatory with respect to race, religion, national origin, sex, disabilities or economic background.

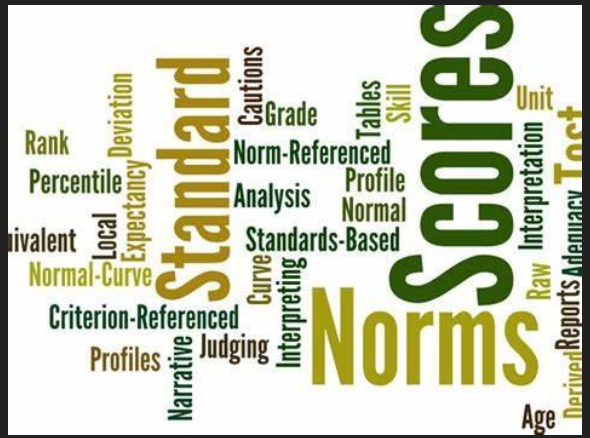
Options for Local Norms

- Riverside Publishing can calculate local norms for you (for a fee),
- CogAT has a screener that can be given across a grade level or school
- You can calculate local norms yourself! (If over 100 kids, use this spreadsheet for each grade level --> LINK)
- Remember, if you change the norms, you may need to change the program as well!

TIPS AND RESOURCES

- Riverside Publishing can calculate local norms for you (for a fee),
- CogAT has a screener that can be given across a grade level or school (WESD adapted this for our needs),
- You can calculate local norms yourself! (If over 100 kids, use this spreadsheet for each grade level --> LINK)
- Remember, if you change the norms, you may need to change the program as well!

LOCAL NORMS PARENT LETTER



Dear Parent/Guardian of:

Your child was administered the Cognitive Abilities Test, a test of reasoning abilities. It is important to remember that this test is not necessarily indicative of academic achievement in the classroom. It does give an indication of how well a student can reason, or think through problems, using language (verbal section), math related concepts (quantitative section), or abstract reasoning involving understanding spatial concepts (non-verbal section).

The Cognitive Abilities Test is a nationally normed test. This means that each student's performance on the test is compared to all children his or her age who took the same test across the nation. The numbers reported below are percentiles and not percentages. This means the scores do not reflect the percentage of the answers they got correct. Instead, the scores can be interpreted like the example student here: *Student 'A' scored at the 40th percentile. This means he or she did better than 40 percent of the students his or her age who take the test.* Please know that any child who scores between the 25th to 75th percentile has scored in the average range.

Your child's percentile scores using **national norms** were as follows:

___Verbal Reasoning ___Quantitative Reasoning ___Non-Verbal Reasoning

According to ARS 15-779, a student must score at the 97th percentile or higher in order to be identified as gifted. Cutting-edge research in the field of gifted education has shown that using national norms is not always the fairest, most equitable way to identify ability. Due to this fact, WESD has begun considering both national norms AND local norms for placement in gifted programs. The use of local norms means determining what 97th percentile or higher looks like in our local population. In essence, it involves comparing WESD students with WESD students instead of the national average.

Your child's percentile scores using **local norms** were as follows:

___Verbal Reasoning ___Quantitative Reasoning ___Non-Verbal Reasoning

Based on the results of this test, your child **(does / does not)** require gifted services at this time. Please be aware that gifted services provided to students as a result of using local norms may not be reciprocated in other districts. We recognize that test scores are only one variable in predicting school success. Motivation, health, interest, social relationships, family expectations, and support all play an important role. Due to this fact, placement in WESD gifted programs as a result of local norms is done provisionally for one year, but will continue unless academic and/or behavioral concerns arise. If you have questions, please contact WESD's gifted department at your earliest convenience.

Sincerely,

Other Resources for Local Norms

From David Lohman (University of Iowa, author of CogAT):

Lohman, D. F. (in press). Nontraditional uses of traditional measures. In C. M. Callahan & H. Hertberg-Davis (Eds.) Fundamentals of gifted education. NY: Taylor & Francis/Routledge. This chapter shows how to create local norms using some simple spreadsheet procedures. Examples are illustrated using talent identification reports from Form 7 of the Cognitive Abilities Test.

Local PR excel computations example

A simple way to account for opportunity to learn (starting largely on slide 16)

Best practices in using standardized tests for talent identification (presentation pdf) (starting largely on slide 71)

Kentucky Department of Education

Kentucky Department of Education Local Norms Calculator (based on work by Marcia Gentry)

Kentucky Department of Education: Special Considerations and Local Norms - PowerPoint (starting largely on slide 22)

What else can you do?

- Front load with enrichment and then assess!

2-2016

A Meta-Analysis of the Effects of Enrichment Programs on Gifted Students

Mihyeon Kim
College of William and Mary, mxkim3@wm.edu

Abstract

Although descriptions of enrichment programs are valuable for practitioners, practices, and services for gifted students, they must be backed by evidence, derived through a synthesis of research. This study examined research on enrichment programs serving gifted students and synthesized the current studies between 1985 and 2014 on the effects of enrichment programs. A total of 26 studies were included in this meta-analysis, and the findings show that enrichment programs had a positive impact on both gifted students' academic achievement (g = 0.96, 95% CI = 0.64 – 1.30, under a random-effects model) and socio-emotional development (g = 0.55, 95% CI = 0.32 – 0.79, under a random-effects model). Regarding moderators of the effects, types of programs, and grade levels influenced both effect sizes of academic achievement and socio-emotional development. The largest effect size was observed for summer residential programs in terms of academic achievement and for a combination of summer and academic year program in terms of socio-emotional development.

OVERVIEW


We can easily identify
actualized talent when
we see it. But, how do we
identify ...
POTENTIAL
?
VYOND

Potential

Competence

Expertise

In the emergent talent phase, enrichment is crucial!

-Paula O.K.

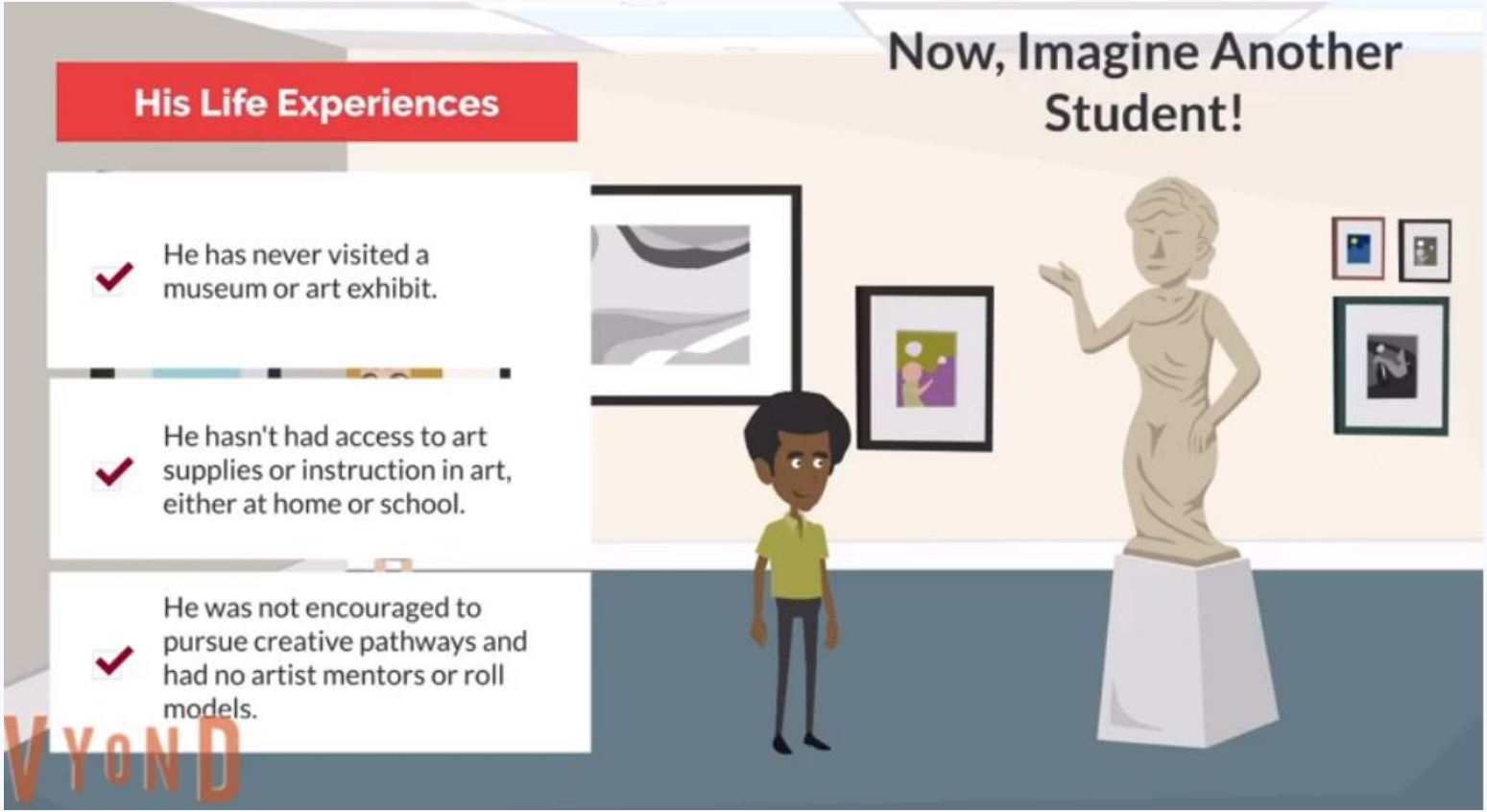
WHY?

1. Chance to discover interests and passions

1. Opportunity to acquire foundational knowledge

1. Meet like-minded peers


Let's Use a Gifted Artist as an Example
What lead to her success?
She was *exposed* to art and had the *opportunity* and *access* to experience it herself.
She developed the necessary knowledge, skills, and abilitiies to become an expert painter.
She had the necessary motivation and psychosocial skills to pursue the endeavor.
VYONED


His Life Experiences
He has never visited a museum or art exhibit.
He hasn't had access to art supplies or instruction in art, either at home or school.
He was not encouraged to pursue creative pathways and had no artist mentors or roll models.
Now, Imagine Another Student!
VYoND


IS IT FAIR TO MAKE COMPARISONS BETWEEN THE TWO AND SAY ONE IS 'GIFTED' AND ONE IS NOT?
GIRL
BOY
-Exposure
-Enrichment
-Access
-Experience
-Encouragement
-Motivation

Three Pieces to the Puzzle

#1

Exposure to Resources & Opportunities for Enrichment

Provide enriched learning experiences to ALL (in culturally-responsive ways). Then, be a talent scout and collect evidence of students' strengths and interests.

VYoND

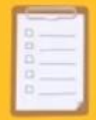
#2

Front Load to Build Knowledge/Skills/Abilities

Preassess and explicitly teach any missing content knowledge or skills. Nurture psychosocial skills and support students as they learn.

#3

THEN, Assess and Identify Talent




REJECTED
REJECTED
ORDER OF EVENTS
1) Front load & Enrich
2) THEN Assess and Make Decisions Using the Protocols Below:
Local Norms
Universal Screening
Multiple Measures
Guest Programs

CURRENT PLAN

Provisional Placement of High-Achieving/Non-Gifted Students into Gifted Programs	Universal Screening With the HOPE Scale	Local Norms Developed Using HOPE Scale Data
Description: -A **temporary placement process was developed** to allow high-achieving students who have scored less than the 97% cut-off score on a national normed test necessary for gifted identification to receive gifted services. A one-quarter guest program contract is issued to a student after the classroom teacher, gifted teacher, and principal have examined all available data and determined placement would benefit the student in question. Placements are reevaluated each quarter.	**Description**: -The HOPE Scale is a research-based tool developed at Purdue University useful for screening for giftedness shown to be invariant to race, gender, and socio-economic background. **All students at our five schools with the lowest number of identified gifted students have been assessed using this tool.**	**Description**: -The HOPE Scale data from all five schools were analyzed and **local norms** created. This information combined with DIBELS data, AZ Merit, district post tests, past gifted testing, etc. helped create a system of **multiple criteria**.
Status: -Year two of implementation -Over 352 high achieving students not identified as gifted are currently receiving services -Dozens of students now qualify after being exposed to advanced curriculum	**Status:** -Year two of implementation -2483 students at our five schools with the lowest number of identified gifted have been assessed by their teacher using the HOPE Scale	**Status:** -Year one of implementation -60 HOPE Scholars have been identified at the five chosen schools.

For More Information

- National Association for Gifted and Talented- www.nagc.org
- Arizona Association for Gifted and Talented- www.arizonagifted.org
- Equal Talents, Unequal Opportunities Report- www.jkcf.org/our-research/what-is-the-excellence-gap/
- Excellence Gaps and America's Talent Underclass Report- https://cepa.uconn.edu/home/research/mindthegap/

TEMPORARY OR GUEST PROGRAMS EXPLAINED

Features	DISCOVER	Integrated Curriculum Model	Multiple Menu Model	Parallel Curriculum Model	Purdue Three-Stage Model	The Grid
Developmental With Increasing Levels of Complexity Based on Student Readiness (Continuum of Talent Development)	Problems are presented with increasing levels of difficulty	Developmental aspects dependent upon the content provided; pre-/postassessments to diagnose and prescribe instruction are a key part of the units	Allows for ongoing mastery and increasing levels of knowledge; student interest and readiness are important	Ascending Intellectual Demand (AID) is part of the model implementation to increase complexity as students need it with scaffolding; student readiness and ongoing assessment important	Three stages of increasing development from mastery of content skills, to problem solving, to acting like a professional in the field; assessment of mastery necessary to move to next level	Content-driven and differentiated; developmental aspects dependent upon the content provided and student readiness
Used as Part of a Talent Identification Model to Find More Students	Yes; additional students identified for gifted programs after exposure to the model	Yes; additional students identified for gifted programs after exposure to developed curriculum using the model	Unknown	Unknown	Unknown; identification prior to stage implementation is part of the model	Unknown
Curriculum Using the Model Has Been Created and Published	Not found	Published curriculum available in ELA, social studies, science, and math	Not found	Not found	Some curriculum has been created and made available for use in Purdue Super Saturday and Summer Programs	No published curriculum, but many examples available

School	Identified Gifted	Guest Program	Total Served Per School
ALT	70	22	92
AC	39	0	39
AV	17	23	40
AR	38	6	44
CW	14	9	23
CL	17	8	25
CH	77	0	77
DF	73	0	73
DV	6	32	38
IR	27	13	40
JJ	21	16	37
LV	20	16	36
LM	89	0	89
MZ	21	9	30
MA	14	9	23
MM	53	25	78
MS	111	0	111
MV	35	4	39
OC	25	19	44
OR	52	3	55
PV	41	0	41
REM	13	24	37
RR	27	5	32
RP	19	0	19
SA	78	4	82
SB	8	4	12
SU	24	7	31
SS	22	21	43
SN	18	5	23
SW	19	6	25
TU	37	9	46
WA	9	14	23
Totals	1134	313	1447

WESD'S TEMPORARY PLACEMENT PROGRAM

Guidelines for Temporary Placement Into Project Potential

I. A placement team consisting of the gifted teacher, classroom teacher, and principal (*Optional*- gifted coordinator) shall be formed once each quarter.

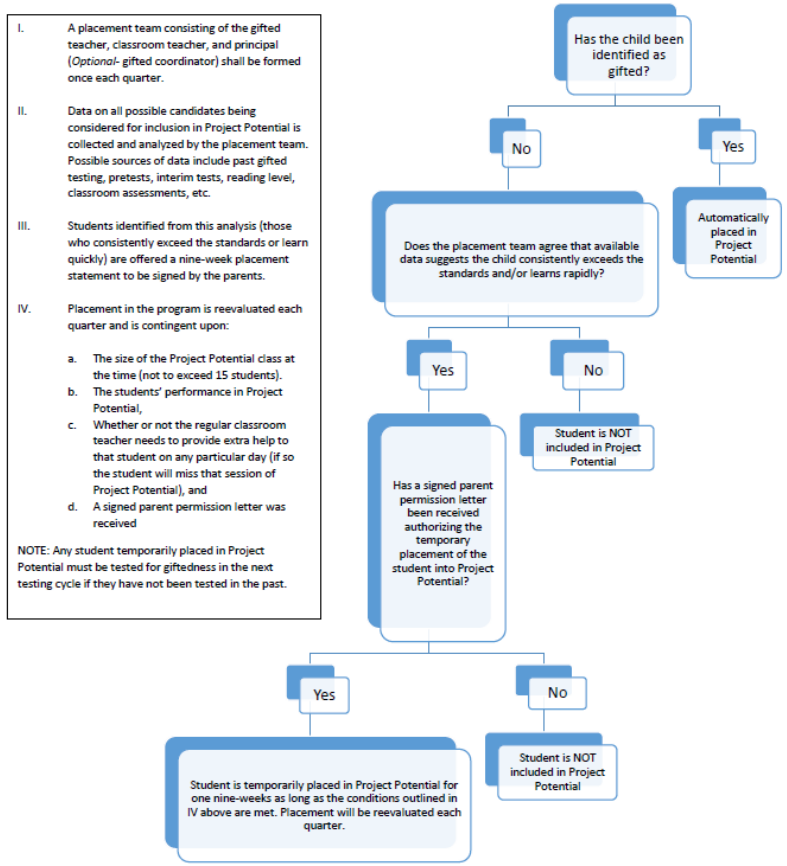
II. Data on all possible candidates being considered for inclusion in Project Potential is collected and analyzed by the placement team. Possible sources of data include past gifted testing, pretests, interim tests, reading level, classroom assessments, etc.

III. Students identified from this analysis (those who consistently exceed the standards or learn quickly) are offered a nine-week placement statement to be signed by the parents.

IV. Placement in the program is reevaluated each quarter and is contingent upon:

a. The size of the Project Potential class at the time (not to exceed 15 students).
b. The students' performance in Project Potential,
c. Whether or not the regular classroom teacher needs to provide extra help to that student on any particular day (if so the student will miss that session of Project Potential), and
d. A signed parent permission letter was received

NOTE: Any student temporarily placed in Project Potential must be tested for giftedness in the next testing cycle if they have not been tested in the past.



WASHINGTON ELEMENTARY SCHOOL DISTRICT

Project Potential Program

Temporary Placement

Child's Name _____

School _____ Date _____

Dear Parent or Guardian,

I, _____, would like to offer your child the opportunity to participate in WESD's Project Potential Program this quarter. *Project Potential* is a program designed to provide enrichment to learners ready for additional challenge in which students are pulled from the regular classroom two or more times a week for a portion of the day.

This decision has been made due to the fact your child is:

a) currently demonstrating mastery of grade level content,
b) capable of going at a quicker pace or motivated to go deeper, and
c) was recommended for these services by a placement team.

Temporary placement into Project Potential is dependent on the number of places available at any given school and/or grade level and will be reevaluated each nine weeks. This is not a gifted identification and does not guarantee placement in the program the following quarter or year. Placement is also made on a trial basis. If the student is unable to maintain the pacing or assignment load, he or she will not continue in the program.

Your child's participation in the program is optional. Please discuss the contract on the next page with your student. If you and your child mutually decide to participate, please sign and return the contract to your child's homeroom teacher. If you have any questions, please contact me at the following email or phone number:

Email _____

Phone Number ( ) -

Sincerely,

_____

Project Potential

Temporary Placement Contract

Directions: Please read each statement carefully. If you understand and agree to what is written, please place an 'X' on the line. When finished, both parent or guardian and student should sign on the appropriate lines and return the form to the student's homeroom teacher.

_____ I understand that placement using this option is on a trial basis.

_____ I understand that I must continue to complete all my assignments and demonstrate a strong understanding of the material being addressed in the regular classroom.

_____ I understand that placement decisions are made each nine weeks based on the number of spots available in the program. Placement is not guaranteed one semester to the next.

_____ I understand that if I am unable to fulfill these criteria I will be placed in my homeroom class where my learning needs can be better addressed.

_____ (Parent Only) I give permission for my child to be tested using a state approved gifted assessment within the next year. Results will be sent home upon completion.

Student Name _____ Grade_____

School _____ Date _____

By signing below, we acknowledge the statements above.

_____

Student Signature

_____

Parent or Guardian Signature

WASHINGTON ELEMENTARY SCHOOL DISTRICT

Project Potential Program

Temporary Placement Re-Evaluation

Child's Name _____

School _____ Date _____

Dear Parent or Guardian,

As you are aware, your child has been participating in WESD's *Project Potential* Program for the last nine weeks of school. *Project Potential* is a program designed to provide enrichment to learners ready for additional challenge. The requirements for the continuation of this service are that the student is continuing to demonstrate:

a) mastery of grade level content,
b) motivation to go deeper and/or at a quicker pace,
c) completion of regular classroom work missed while in *Project Potential,*

In addition, the following <u>two</u> requirements must be in place:

a) the classroom teacher AND teacher of the gifted believe continuing in Project Potential is in the best interest of the student, and

b) the size of the *Project Potential* class is less than 15.

Remember, **your child's participation in the program is optional.** At this time, it has been determined that your student will:

_____ Continue in *Project Potential* _____ Discontinue Services

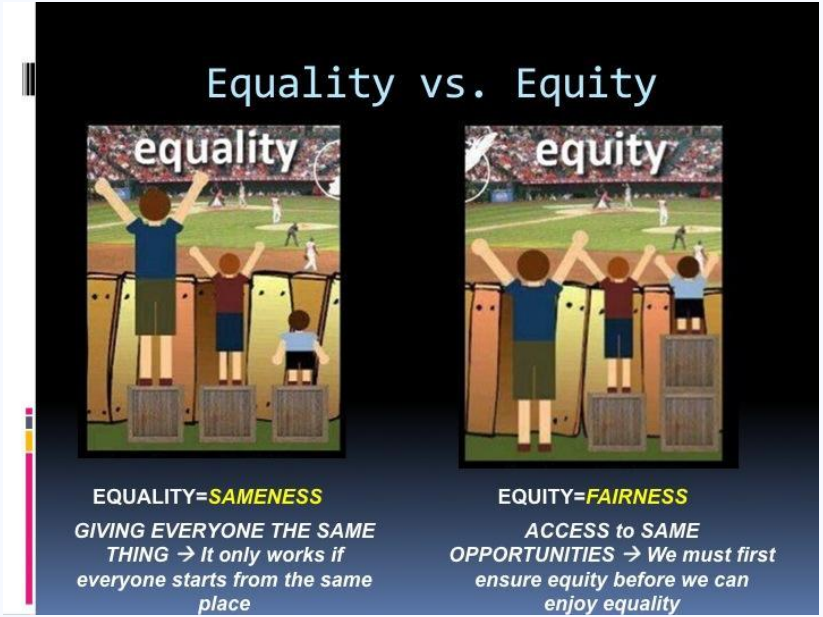
The reason for this decision is:

_____
_____
_____
_____

If you have questions, please feel free to contact me at the email address below.

Email _____ Sincerely,

_____

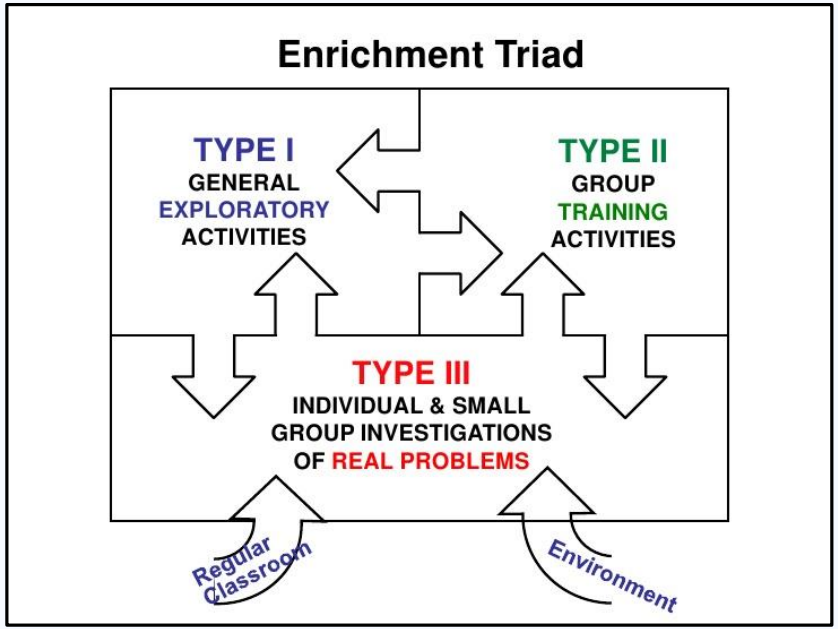


RESULTS FROM ONE WESD SCHOOL

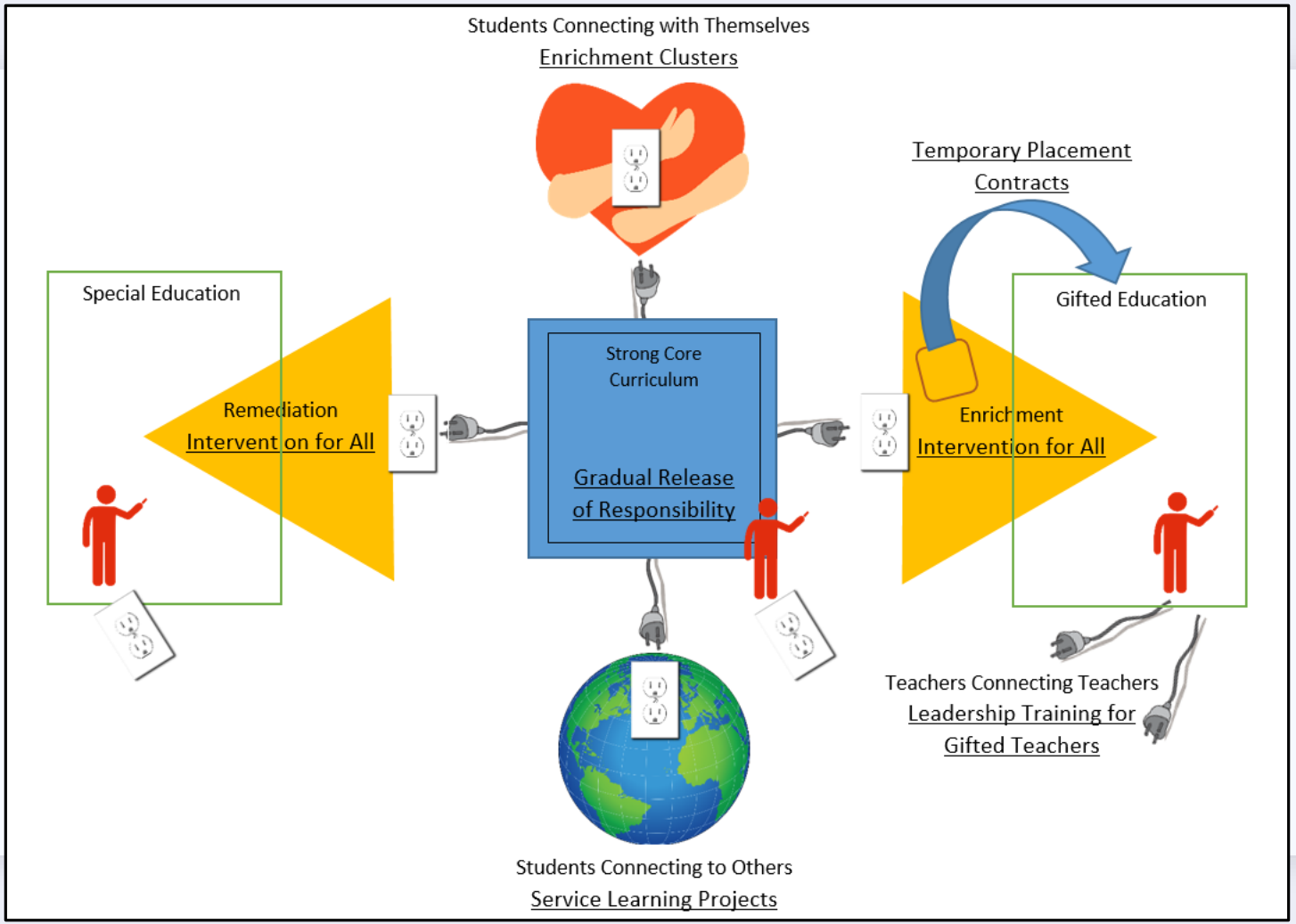
Alta Vista

	Total Enrolled	# Gifted	Temp. Place.	HOPE Scholars	# Served	% Non-White
Jan. 2018	768 Kids	13 Kids (1.7%)	4 Kids	0 Kids	**17** Kids (2.2%)	?
Jan. 2020	743 Kids	28 Kids (3.8%)	27 Kids	10 Kids	**65** Kids (8.7%)	82.5%

- All of 3rd grade will be tested on 2/5/20
- 11 Students at AV have gone from TEMP or HOPE to Qualified after a year of Project Potential
- Another 5 TEMP or HOPE increased their scores on the CogAT to 90-96%



GUEST PROGRAMS ALIGN WELL WITH RENZULLI'S SCHOOLWIDE ENRICHMENT MODEL FRAMEWORK


Students Connecting with Themselves
Enrichment Clusters
Temporary Placement
Contracts
Special Education
Gifted Education
Strong Core
Curriculum
Remediation
Intervent on for All
Gradual Release
of Responsibility
Enrich ment
Intervention for All
Teachers Connecting Teachers
Leadership Training for
Gifted Teachers
Students Connecting to Others
Service Learning Projects

In Closing!